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Government Retarding Improvements.

"ACROSS THE OCEAN IN SIX DAYS.—One of the greatest impediments to the improvement of steam navigation is in the great lines sustained by the aid of the government in this country and in England. The Journal of Commerce, which has always favored the 'protective policy' in its most odious form, as applied to the Collins' line, admits this in the following paragraph:

'Mr. Whitworth, who was one of the British Commissioners to our Crystal Palace, stated when he was here, that steamships would soon be built in England that would cross the Atlantic in six days, and that it would be done now, but for the reason that it would prejudice the interests of existing lines.'

We think it bad enough that government by its enormous gratuites should give one line of steamships advantages over all others and keep out the natural competition of unfettered trade. But here is something worse; the interference of the government not only does this, but keeps down the natural improvement of steam navigation, and the English government being committed to the same policy, we are put back or kept back in one of the most important agencies of civilization."

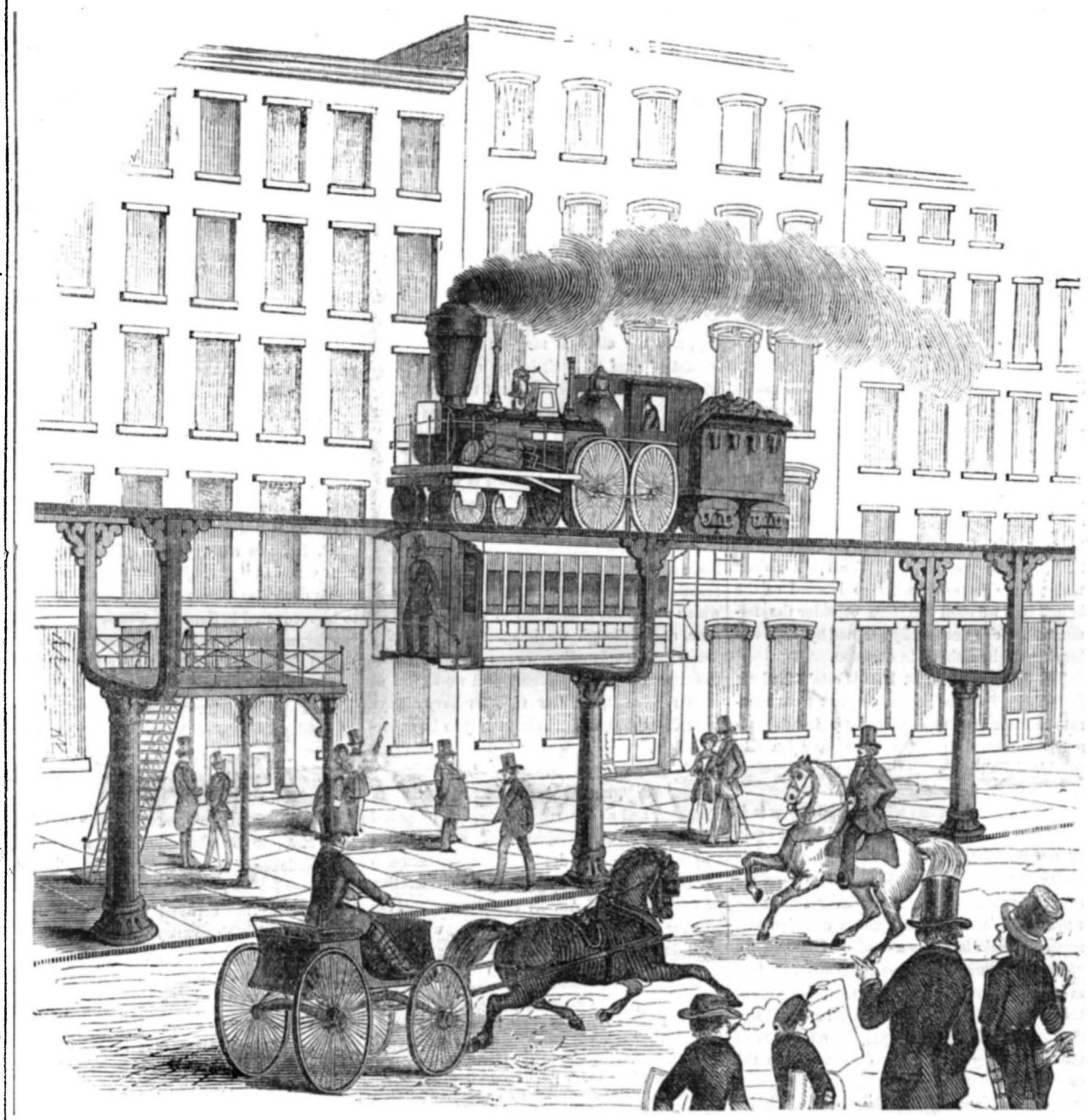
[The above is from the Providence "Journal;" we cannot conceive how any person of intelligence could make such a statement. How does government grants prevent vessels (that can) from crossing the ocean in six days? If any company can build a steamship that will cross the ocean in six days—that is, from New York to Liverpool, surely the government will not put an embargo on the project. Those who make the statement that a steamship can cross the ocean in six days, surely do not reflect that it would require an average speed of 19½ miles an hour to do so. This would be nearly equal to our swiftest steamboats on the North River. No man who has crossed the Atlantic in a steamship, and who is acquainted with the present state of engineering science, would speak so incautiously. The first steamship that makes the passage from New York to Liverpool, or from thence here, in nine days, will be looked upon as having achieved a remarkable feat. Let this be first done before we talk about a six day's voyage.

Silver at Lake Superior.

Hon. Truman Smith, in a letter to the "N. Y. Tribune," announces the discovery of silver in an unusually large proportion among the ores of the Lake Lake Superior region. Mr. Smith has spent most of the summer on the Lake, and has brought with him specimens of the ore and of the silver extracted. The ores found at different mines yield as follows: From the Northwest mine, 56 ounces to the 100 pounds; from the Isle Royal mine, 26 ounces; and from Cliff mine, 12 ounces—a yield of four to six ounces being considered as paying all expenses of working. Mr. Smith is confident that the quantity of this valuable ore is large.

Wm. Root, Druggist, of Marietta, Geo., writes us that a few cloves added to a bottle of gum tragacanth solution (paste) will keep it sweet; he believes; they will also keep ink from becoming mouldy.

SWETT'S ELEVATED RAILROAD FOR BROADWAY.



No street in our city—in fact no street in any of the cities of the world—has been the object of so much solicitude as Broadway of New York. So envious, indeed, have some cities been of the attention which it has received, they have even changed the good old names of some of their streets into that of a Broadway, although some of them, funny enough, are more distinguished for their narrowness than breadth. This is particularly the case with a city not over three degrees farther north, namely, old Beverwyck—our Capitol—modern Albany. It had two streets named *North* and *South* Market, very respectable places of business, and part of one of them, fine, broad, and straight, while other parts of it, and South Market street, (which runs into it) are as crooked as a ram's horn, and not much wider than "Tin Pot Alley." It would have been more to the fame of Albany if the people had retained the old names of the streets mentioned; but they had a lingering regard for a "Broadway" name. Citizens of almost every city have projected plans to relieve New York Broadway of its bustle below, by endeavoring to elevate some of it above. No one who has anxiously waited for twenty minutes to cross Broadway in order to reach our office, and that at the evident risk of a collision with an omnibus, but has offered up a petition for some relief for that over-crowded thoroughfare. No city in the world, we believe, has such an overcrowded street as Broadway, below the Park, with vehicles of every description. To remedy the evil, various plans have been proposed, but none have come so near being carried out as a railway in the middle of the street; the grant for which was given by our immaculate Aldermen, but averted by a legal injunction. Many, however, contend that no ground railway can afford relief to Broadway, hence ways have been devised to spread the travel, to divide the people, by allowing some to be traveling above, while others are traveling below. Among the many plans proposed, the annexed engraving represents the plan of James H. Swett, of Pittsburg, Pa., a well known inventor. It requires but little explanation, the engraving tells its own story, except the smoke of the locomotive, which the engraver, who likes a cigar, conceived to be an indispensable adjunct. No wood as a fuel is to be or would be allowed in Broadway on any engine; it might set fire, by a stray spark, to one of Stewart's bales of fine French muslins, and that would never answer. Coke alone must be used for fuel, it will neither emit smoke nor sparks; it will not dim the light of a single window in any of the noble buildings.—This railway, when adopted, is to be erected on arms branching out from strong single pillars.—The locomotive is to run on the rails, and carry a suspended car, which will pass between the spaces of the supporting arms. Elevated stations, as shown, will be erected at different cross streets, to let out and take in passengers. This road is to be high enough to be out of the reach of all vehicles below, and thus give no annoyance. The posts can be erected near the curb stone, so as to allow the track to occupy the least used portion of the street. With this explanation we need add nothing more; only that there will be no necessity for putting up on any of the crossings, "look out for the engine when the bell rings."

A Suggestion in Gas Lighting.

A writer in the London Builder suggests as a remedy for the great heat produced by the combustion of gas, and the effect which it has in diminishing the purity of the air—that each main gas pipe should be accompanied by another, conveying air from the external atmosphere, ramifying with all the pipes and discharging its contents by openings alongside of all those from which the imflammable gas issues. "If gas pipes were fitted up in this manner," he says, "so that every burner should draw its supply of oxygen from the external air, and not from that of the room in which it is burned, the air of the latter would not be much heated or so much diminished in purity."

[This plan, however, we consider, would be a useless expenditure, because the same objects can be obtained by admitting into any room the proper quantity of fresh air to supply combustion.

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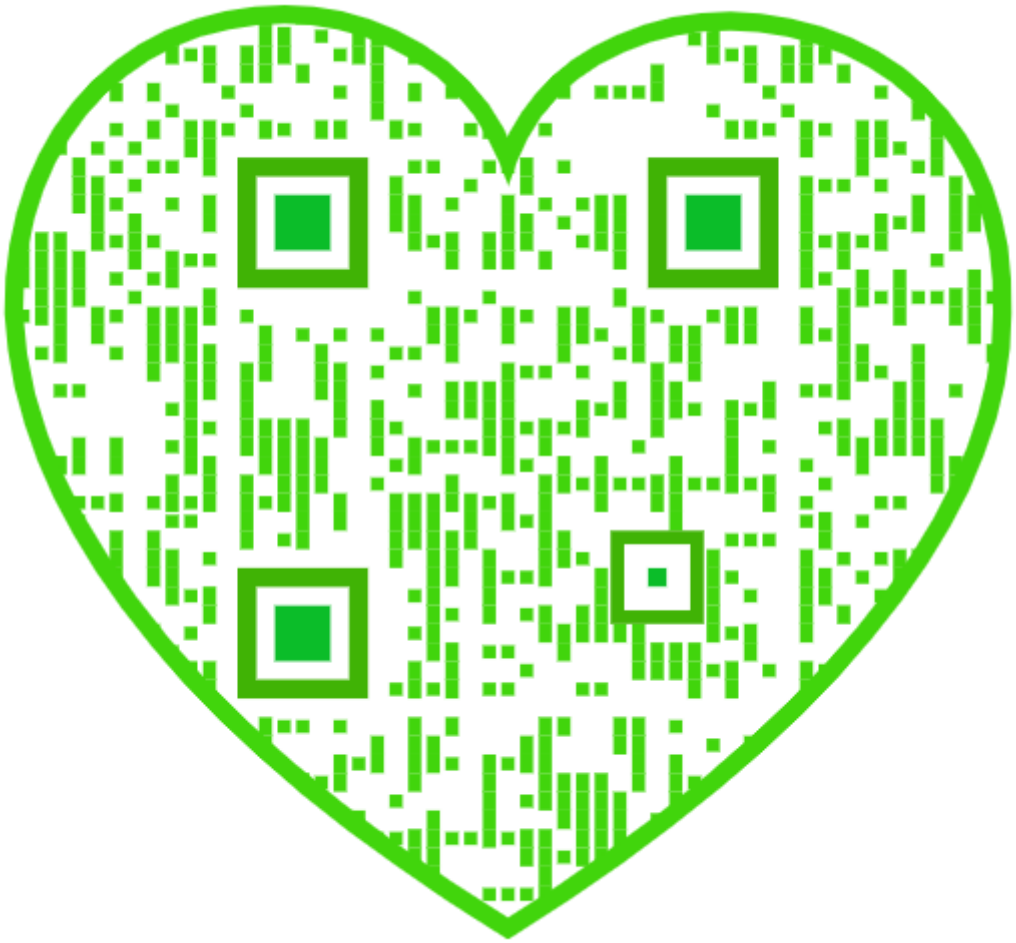

Imponderable Agents---No. 3.

The only theory proposed in explanation of the phenomena of Heat, until since the recent discoveries in polarization, was the one even now almost universally received, starting with the assumption that heat or caloric is a fluid, having an independent existence, that so far as we know, it is diffused universally throughout space, and that relative heat and cold are produced by the presence of greater or less portions of the calorific fluid. But it has been lately discovery that heat, as well as light, is susceptible of polarization; and as it is governed in its reflection and refraction, by the same laws which govern the similar phenomena of light, it becomes necessary for those who adopt the undulatory theory of light to apply a similar explanation to the phenomena of heat. Hence we are now taught that heat, as well as light, is produced by the vibrations of an elastic medium diffused throughout space, the different degrees of heat being produced by the varying intensity of the vibrations.

But we shall not permit these philosophers to stop here: it has been shown that electricity is likewise capable of polarization, and as its laws are very similar to those of light and heat, in order to be consistent with themselves, and to maintain their theory at all; for if any other theory will explain this phenomena of electricity, it will equally explain the phenomena of light and heat; the undulatory hypothesis must be also applied to this. If this be done, one of two assumptions must be made, either there are diffused throughout all space three elastic media, each capable of vibrating at widely different rates of frequency and intensity, or there is one medium capable of producing, by its vibrations, results as totally distinct as are those of light, heat, and electricity. We think no one will propose an assumption so labored as the latter, and we shall therefore consider the former as the one necessarily adopted by those embracing the hypothesis in question.

The doctrine of latent heat is established not from theoretical considerations, but from accurate and indisputable experiments. In this manner it has been determined that any body in passing from the solid to the fluid state combines with a certain definite quantity of caloric, which remains in combination with it, so long as it is in the fluid state, but is set free when it again becomes a solid. Let it be remembered this is not theory, but *fact*. It is therefore possible, according to the theory of undulations for the *vibrations* of an elastic medium to combine with matter, remain in this state of combination for years or centuries, and then to be again set free in an active state! This we think is carrying theory a little farther than the most ardent theorists will be willing to go, yet the advocates of the undulatory hypothesis cannot escape the conclusion.

But this is not all, experiments have shown that heat is capable of increasing the bulk of matter, that a few increments of heat will sensibly increase the length of an iron rod. More than this the three forms of matter known as solid liquid and gaseous, are acknowledged by all to be produced by the presence of greater or less portions of heat. Is it reasonable to suppose that the vibrations of a medium so rare as to escape the senses, to elude the most careful investigations, aided by the powers of modern experiment and analysis, and known to us only through its results, can produce effects by its vibrations so powerful as those here witnessed?

But again, the vibrations of an elastic fluid can only act on a solid body by generating corresponding vibrations in that body. The change of state from the solid to the fluid then must be an actual shaking to pieces of the particles of the solid body! This borders closely on the ridiculous, but it is certainly a fair inference from the theory under consideration. But we must be allowed here to inquire why so powerful a vibration should not in some other way become manifested. Why, for instance, is it not communicated to the air, and revealed to us by sound. If it be said that the vibrations are so frequent that they cannot be caught by the air, we shall reply that experiment has taught us that bodies have but one *tone*, and are incapable of vibrating in any other, and more than this, that the air is capable of being influenced by heat, hence it must be capable of taking up these vibrations. If it be said the air vibrates, but produces heat instead of sound by these vibrations, then we have found an elastic medium, capable of producing two different classes of phenomena by its vibrations, and by the same mode of argument, the phenomena of all the imponderable agents!

Should any one be found bold enough to hazard the assumption that Light, Heat. and Electricity are all produced by the vibrations of a single elastic medium, it would follow, as we have found that the air is capable of producing these results, that there were *two* media capable of producing Light, Heat, and Electricity by their undulations; and as the same arguments will apply to all other bodies, as well as air, the correct statement of their theory will be, that "a certain definite number of vibrations in a given time produces light," and the same of the other imponderables, it being only necessary to suppose the existence of an undiscovered medium to account for their transmission through space.

The difficulty started by us in our first article has therefore become greatly increased. The sun must be at each moment vibrating at such rates as will produce not only the unnumbered shades of color, but also the totally and widely distinct phenomena of heat and electricity, and the ethereal medium is at the same instant of time transmitting to remote spheres with fidelity they sever different undulations.

From these and other considerations it has long seemed to us that the undulatory hypothesis supported though it be by the weight of authority in Europe and America is wholly untenable, and as the corpuscular theory of Newton likewise presents difficulties which we cannot surmount, we have been obliged to abandon both, and seek by careful and long-continued research, for an explanation of phenomena which are at the foundation of all physical science, and although we imagine that we have found such explanation, we are not so vain as to suppose that the philosophical world will at once receive it, for new theories have always been distrusted, and it is not likely to be otherwise now.

We have not yet reviewed the two theories of Electricity, but as we adopt mainly that of Franklin, and as our readers are now prepared to understand the general theory we are about to propose, we shall defer our remarks concerning that of Du Foy, as well as a consideration of the subjects of Affinity and Magnetism, until after having given our own views, which we shall do in the next article.

(To be Continued.)

[For the Scientific American.]

Patent Laws of New Brunswick.

[Synopsis of an Act of the Legislature of the Province of New Brunswick, passed in the Legislative Session of 1853, entitled "An Act to Regulate the Granting of Patents for Useful Inventions." By PETER STUBS, Barrister at Law, St. Johns, N. B.]

[Concluded from page 27.]

19. Any person discovering an improvement upon a patented invention, may obtain a patent for the improvement, but it shall not be lawful for him to make or vend the original discovery, nor vice versa. Simply changing the form or proportions of any machine, &c., is not to be deemed a discovery.

20. If by mistake or accident, and without any fraudulent intent, a patentee includes in his specification what he has not really invented or discovered, his patent, although void for what is thus included, is good and valid for so much as is really his own, provided it is a material and substantial part of the thing patented, and can be distinguished from other parts patented without right, and suits can be maintained for infringing the valid part of the patent, but costs will not be allowed on recovery, unless before suit commenced a disclaimer is filed in the Provincial Secretary's office of that part patented without right. No person bringing a suit shall have the benefit of this section, if he has deferred for an unreasonable time to file his disclaimer.

21. If by inadvertance a specification is too broad, and claims too much, the patentee may file a disclaimer in writing, setting forth the true extent of his interest, which disclaimer is to be recorded in the office of the Provincial Secretary, and shall be considered as part of the original specification, to the extent of the interest possessed by the party making the same.

22. If a patent becomes invalid by reason of a defective specification, or in consequence of claiming too much, and there is no fraud, such patent may be surrendered and a new one issued for the residue of the term named in the first patent, in accordance with the new specification. The new patent is available to the first patentee and his representatives and assignees.

23. If an original patentee is desirous of adding a description and specification of an improvement more recently discovered by him, he can have the same annexed to his original description and specification, upon like proceedings as in the case of an original application.—The Provincial Secretary to certify upon the annexed, (new) specification, the time of its being annexed.

24. Any person in this Province who discovers an original design for a manufacture, or of art, or ornament, is entitled to a patent for a term not exceeding seven years.

25. No patent granted in England shall have any effect in this Province, until after copies of the original specification and drawing, or duplicates of the original models are filed, or lodged in the Secretary's office.

26. Before the expiration of a patent, the patentee may apply for an extension of it, when his application is referred to a board of three persons, who are to take into consideration the receipts and expenditures of the patentee.

27. If the board is of opinion that the patent should be extended, they will report to the Lieutenant Governor accordingly, who will direct the Provincial Secretary to indorse an extension of the patent. Such extension to extend to assignees and grantees of the original patent.

28. Imposes a penalty of £25 for affixing such words as "patent," "patented," or other words of similar import to unpatented articles, to be recovered in Supreme Court, one half the penalty, when recovered, to be paid into the Provincial Treasury, the other moiety to the party sueing for the same.

29. Patentees are required to affix on patented articles the date of the patent under a penalty of £5.

30. Defines the mode of pleading in suits to be brought.

31. Quakers may affirm oaths; when administered here, to be administered by a Judge or Commissioner of the supreme Court. In Great Britain or Ireland, before the Mayor of a city or borough, to be certified under Corporation Seal; in a foreigh country by a British Consul or Vice Consul, and certified under his Seal.

32. Fees to be the same as a schedule.

33. Letters patent to be void, if within three years from their date, the patentee shall not establish the manufacture of it in this Province, er in case the materials for manufacturing the same are not here to be had, introduce the patented article into the Province.

TABLES OF FEES.

If a British subject, whether original inventor or assignee of an invention in the Province, or of any letters patent abroad, in full for obtaining letters patent, exclusive of recording assignment	£5 7s. 6d.
If a foreigner, whether original inventor or assignee . . .	50 0 0*
Fee for adding to a patent specification a subsequent improvement	4 0 0
On surrendering an old patent to be re-issued to correct mistake of patentee	4 0 0
For a disclaimer . . .	3 0 0
On application for a design .	3 0 0
Copies of patents, or other papers 2s. per 100 words	
Recording assignments not over 300 words	2 0
Every additional 100 words .	1 0
Copies of drawings and models to be matter of agreement.	

* This heavy expense may, to a considerable extent, be avoided by American citizens, who can assign patents taken out by them in the United States, under Section 7, to subjects here, who can re-assign at a trifling cost.

New Furnace.

A patent for a smokeless furnace has been recently secured by Mr. Lee Stevens, of England. The invention consists in an arrangement by which the hot cinders from the fire-box, falling on a grate underneath, are there turned to account in heating a current of air, which, passing into the furnace, prevents the generation of smoke. Two favorable examples of the working of the patent have been exhibited, and gave great satisfaction to those who witnessed them. The arrangement is applicable to all furnaces, and involves only a trifling expense. It has the advantage of striking at the root of the smoke nuisance, and preventing instead of curing it.—[Exch.

[We do not see how this can prevent the smoke nuisance; it requires more air than is fed into the furnace, to mix with the carbonic oxyde, and this ignited, to consume the smoke. Hot air to supply furnaces is nothing new; Mr. Stevens, however, may have made a good improvement in heating his feed air.

The Science of the Fire Annihilator.

An experiment was lately made at Buffalo, with a building one and a half stories high, having dry sticks and shavings in it. Three annihilators put out the fire. The house was built and all prepared for the application of the annihilators at the right time. One of our cotemporaries thus explains the principle of the annihilator:—

"The Annihilator operates on strictly scientific principles, and must of necessity, to a greater or less extent, produce the intended effect. The largest size is constructed so as to contain a cubic foot of water, which during the process is converted into steam—expanding to 1,700 cubic feet. This alone is a powerful agent in subduing flame. In the center of the machine is the gas producing compound, weighing about thirty pounds. This is composed of nitrate of potash and charcoal or carbon, so arranged as to be capable of being instantly ignited. The combustion decomposes the nitrates setting the nitrogen free, which is an extinguisher of itself. The oxygen combines with the carbon, forming carbonic acid gas, which is destructive of combustion as well as of animal life. This process generates heat, which converts the water into steam, when all these three annihilating agents are projected upon the fire which cannot survive the embrace."

[It follows from this, then, that the steam generated by one annihilator is only sufficient for a room twelve feet square. The carbonic acid gas generated is surely not different from the gas generated by a fire itself—it is the very same. It is not known to many that although carbonic acid gas readily puts out flame, it has but little effect upon red-hot embers or other material, hence the necessity for steam or water in some state, to act along with the carbonic acid; this is something older than Phillip's Annihilator.

Singular Electrical Effect.

The following extract from a letter from Capt. Tessier, of the ship Austria, to her owners, describes an effect of electricity which we do not remember ever to have seen mentioned before. It is of some practical interest, and shows the necessity of isolating instruments on shipboard as much as possible—[Charleston Mercury.

LIVERPOOL, Sept. 2d, 1853.

"My chronometer stopped, as I informed you in my last, on the fourth day out from Charleston. The cause of it has been ascertained beyond the possibility of a doubt. On its being taken to pieces, the balance spring was heavily charged with electricity, and actually bent, and all the other works composed of steel more or less injured. At the time it stopped a heavy storm of thunder and lightning was passing over the ship, the surrounding atmosphere was in such a state of commotion that the Austria fairly trembled in her every timber, and we distinctly heard the lightning hiss as it struck the water in rather uncomfortable proximity to our sides. All our compasses were also slightly injured, and had to be sent on shore for correction, on the arrival of the ship in Liverpool."

Sewing Machine Claims.

E. Howe claims to be the inventor of the needle with an eye near the point for sewing. He threatens in a card to sue all who use such needles without his consent. This information will be of interest to many who have written to us on this subject.

We shall devote some attention to the Fair of the American Institute, and report in our next.

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING OCTOBER 2, 1853.

CAR WHEELS—By J. Baker, of Boston, Mass.: I claim in car wheels the connection and intersection of the convex and rim plates by independent and interlacing branches, as set forth.

SLAT MACHINES FOR WINDOW BLINDS—By E. R. Benson, of Warsaw, N. Y.: I claim, first, the arrangement for moving the hollow augers back and forth in performing the milling of both ends of the slats at once, combined with the slide, operated as specified.

Second, the manner of feeding the dressing and sticking portions of the machine by means of the slide, operated as specified.

Third, the method described of sticking the wire by means of hooks and drivers, as specified.

CORN PLANTERS—By G. A. Bruce, of Mechanicsburgh, Ill.: I do not claim the dropping slide nor any peculiar arrangement thereof, as they are used in many drills, and are constructed and operated as described.

I claim the employment or use of the balance beams, with the rods attached to them, and operating as described, for the purpose of properly adjusting the seed in the holes of the dropping slide, and also to prevent the clogging of the same, as described.

[This is a very good improvement; a description was published on page 252, Vol. 8. Sci. Am.]

MACHINES FOR TOPPING COTTON IN THE FIELD—By A. A. Dickson, of Griffin, Ga.: I claim the employment of two sets of cutters, one set being adjustable, and revolving in a horizontal direction and the other being fixed, and revolving in a vertical direction, and both sets being set in operation through the action of the driving or propelling wheel, in any manner as specified.

[A notice of this invention was published on page 100 Vol. 8. Sci. Am.]

APPARATUS FOR POLISHING ANVILS—By Mark Fisher & J. H. Norris, of Trenton, N. J.: We claim suspending the anvil in the sliding and vibrating frame, and arranging it in respect to the polishing part of the apparatus, and operating as described.

MACHINE FOR RUBBING AND POLISHING LEATHER—By J. F. Flanders, of Newburyport, Mass.: I claim, first, the employment of a vertical shaft with arms extending from its sides, for the purpose of carrying the tools and their accompanying mechanism, in combination with a plane surface horizontal table, as described.

Second, I claim the jointed tool holder, either with or without the springs, constructed as described.

Third, I claim the arrangement of a movable table permitting of an endwise and at the same time downward motion, constructed as described.

I do not claim to be the inventor of a rotating shaft with arms extending from its sides, carrying tools for the purpose of dressing leather, only when used in a vertical position and in combination with a plane surface horizontal table; nor do I claim the springs operating to produce the pressure on the leather, nor do I claim to be the inventor of the sliding bolts,

MACHINE FOR GRINDING PLOW CASTINGS—By Joshua Gibbs, of Canton, Ohio: I claim the carriage upon which the casting is fastened, with the weight and grooved stand upon which the carriage is moved, arranged as described.

PLOWS—By R. A. Graham, of New Paris, Ohio: I claim, 1st, the screw bolt, or its equivalent, for setting out or in the rear edge of the mould board, with respect to the landside, acting in combination with the bolts E and F, which being tightened, attach to each other, the mould-board, sheath, and lipped or flanged share, as described, and which bolts being temporally relaxed, permit the vibration of the mould board about the bolt, E, without interrupting the continuity of plowing surface, or disconnecting the several parts.

Second, the shifting or adjustable socket attachment of the beam to the sheath, in combination with the dovetail and adjustable connection of the rear end of the beam to the helve, or equivalent devices, so as to vary the direction of the draught of the plow, to suit the requirement of a change in the flare of the mould board and other objects, as explained.

CORN HUSKING MACHINE—By T. C. Hargreaves, of Schenectady, N. Y.: I claim, first, the application of the chisel or chisels, and cutter or cutters, in combination with the gate or gates, operated by gearing or other means, as described.

Second, I claim the construction of the circular plate or its equivalent, as described, in combination with the cutters for severing the cob, and the elbow lever for discharging the husks, as set forth.

Third, I claim the combination of a cam, lever, and spring, with a stud for holding the circular plate stationary whilst removing the ear and husk from the machine, or any other equivalent, as specified.

ANNUNCIATORS FOR HOTELS—By Wm. Horsfall, of New York City: I claim, as described, the manner of constructing and arranging the index plates, in combination with the alarm and its necessary attachments, so that each plate can be operated and its number exposed to view, and also the alarm sounded instantly after, by simply employing a rod, having a tripping arm, as specified.

I also claim, as described, throwing the index plates back to their proper position by means of the eccentric rod, in combination with the peculiar construction and arrangement of the said index plates, the eccentric being operated in any manner as described.

[This is a very simple and effective apparatus: see notice on page 276, Vol. 8.]

STRAW CUTTERS—By Richard Ketcham, of Seneca Castle, N. Y.: I claim the method, as described, of hanging and operating the cutter by means of its pivotted attachment to the slide, in combination with a guide rod, the latter being made adjustable by the helical spring at the top, or other equivalent device, as set forth.

I further claim, in combination with the inclined reciprocating knife and simultaneously with the descent thereof, giving to the gauge a lateral curvilinear or oblique downward action away from the rear end of the knife towards the front end thereof and below the cutting edge of the table, substantially as described, whereby the straw is restrained from being crowded towards the back end of the knife by the inclination of the cut, and a free escape is established for the cut particles to pass off, as specified.

CAR WHEELS—By Z. H. Mann, of Newport, Ky.: I claim the construction, as described, of a cast-iron railroad car and locomotive wheel, whose web or portion connecting the hub and rim, consists, at the hub, of broad radiating plates in the plane of the axis, whence turning alternately to the right and to the left, they contract in the direction parallel with the axis, and expand proportionally in the direction of revolution, those of each alternate set uniting as they approach their respective margins of the rim concave, so as to form flanges having openings left for each intermediate plate on the other side, forming a braced and counter-braced wheel, possessing the requisite lateral stability and continued support at the rim, together with adequate provision for the strain arising from shrinkage, &c. And this I claim, whether the said web be formed in a cyma reversa curve, as described, or in any way substantially equivalent.

SMUT MACHINES—By Benjamin Rutter & Henry Rowzer, of Piqua, Ohio; We claim the narrowing of the spout near the grain discharge, in combination with the curved passages, which receive and discharge at their respective apertures the light grain and trash taken from the grain discharge aperture.

ROTARY STEAM ENGINES—By John C. fr. Salomon, of Washington, D. C.: I claim the combination of the elliptic wheel and its cylinder with the sliding abutments or stops arranged in such a manner that a continuous propelling force may be communicated to the wheel without exposing it to the unequal pressure of the fluid on opposite sides of its axis throughout the entire revolution in either direction, as specified.

I further claim, in combination with the revolving wheel or piston, the arrangement and operation of the valves described in such a manner that as the effective propelling area of the piston surface exposed to the impelling fluid, between either two abutments diminishes, the wheel is assisted by an increasing area of piston surface exposed to the action of the fluid, on the opposite sides of the abutments, as specified, whereby the propelling fluid may be worked expansively without impairing the uniformity of the active power of the engine, as set forth.

[Why abandon gas?]

COOKING RANGES—By G. S. G. Spence, of Boston, Mass.: Mass.: I do not claim to combine a hot air flue with a fire place, and a flue extending directly therefrom, to and underneath an oven and up the rear end of such oven, that such hot air flue shall pass only in contact with the back of the fire place and with the oven flue.

But what I claim is the arrangement of the fire place, boiling chamber, and smoke flues leading under the oven and in rear of the back thereof, in combination with the peculiar arrangement of the hot air chambers, whereby the fire place and oven flues are not only made to heat the air flues, but the bottom plate of the boiling is also made to impart heat thereto, and the back as well as the front of the upright air flue, is also heated by the smoke flue through which it passes, as specified.

BURGLAR ALARMS—By Edward Brown, of Ringe, N.H., (assignor to Josiah Norcross, M. D., of South Reading, Mass.): I do not claim the combination of an alarm clock with a lamplighting apparatus, they being so applied that, on an alarm being sounded by the clock-works, they shall set free the separate machinery by which the lamp and friction match are rotated, the latter being carried against a roughened surface, for the purpose of igniting it.

In my alarm apparatus, the spring which moves the match holder not only performs the operation of moving such match holder, but it elevates the bell and its spring until the slide is brought up against the shaft, which, taking place, the accumulated force on the bell causes the bell to vibrate and sound the alarm.

I therefore claim the improvement of so connecting the match holder, and the bell spring, O, with the slide, that the spring, F, of the slide, on being set free by the opening of the door shall not only elevate the match holder, but set the bell in motion so as to cause the alarm to be sounded by it, as specified.

MACHINES FOR PARING APPLES—By E. L. Pratt, of Worcester, Mass. (assignor to James Sargent & D. P. Foster, of Shelburn, Mass.): I claim hanging or connecting the block which carries the knife to the rod, which carries said block, so that the block and knife can vibrate in one or either direction, by means as described, so as to allow the knife to vibrate and accommodate itself to any irregularity in the surface of the apple or vegetable pared, as described.

HYDRAULIC RAM—By J. C. Strode, of East, Bradford, Pa.: I claim the application of the brachystochrome curve to the conduit pipes of hydraulic rams, as set forth.

[See notice of this invention on page 156, Vol. 8.]

TURBINE WATER WHEELS—By Henry Vandewater, of Albany, N. Y.: I claim the manner of regulating the discharge openings of the buckets from the outside, in combination with the central gate, for adapting the wheel to varying heads of water, and to the nature and amount of work to be done by it, consisting of the circular gate, constructed, arranged, and operated with the wheel, as set forth.

AIR ENGINES—By J. A. Woodbury, of Winchester, Mass., and Joshua Merrill and George Patten, of Boston, Mass. Patented in England Jan. 5, 1853: We claim in atmospheric air engines, supplying the air pump from a receiver into which air has been condensed, by a hand pump, auxiliary engine, or otherwise (the hand pump or auxiliary engine being used for the purpose of charging and sustaining a uniform pressure in the receiver, from which the air pump is supplied), when the same is done in combination with a second receiver into which the air is to be still more compressed and maintained at a uniform pressure or nearly so, by the application of heat to the air on its passage to the working cylinder, as set forth.

STOP COCKS—By Elizur Wright, of Boston, Mass.: I claim the combination of a ball with an elastic cylindrical ring seat, constructed with or without a wire, as described, for the purpose of forming a valve

THROTTLE VALVE ARRANGEMENT—By J. E. Anderson, of New York City: I claim the combination to serve the purpose of a throttle valve or regulator, of two hollow cylindrical valves connected together with a lever on opposite sides of its fulcrum, and having slotted openings corresponding with similar openings in the cylindrical valve the several openings being arranged as set forth.

[Mr. Anderson is a practical engineer, and has patented a very simple improvement. See notice on page 332, Vol. 8.]

MAGAZINE GUNS—By E. H. Graham, of Biddeford, Mass. I do not claim a rotary magazine connected with the barrel of a fire-arm, such being in common use in repeating guns; nor do I claim to combine a magazine for powder, balls, and priming, with a hollow cylinder or tube made to encompass and revolve on a barrel, while the barrel is provided with holes or passages to receive the load from the magazine when the latter is turned around on it into a suitable position. Nor do I claim the combination of a rotary charge receiver (placed within the barrel or breach of a gun) and a stationary loading magazine affixed on the barrel or breech.

What I claim is the arrangement of the series of ball chambers, &c., and the series of powder chambers, &c., in concentric circles and on the side of the gun barrel and out of the sight range, and so as not only to revolve and work against a common plate affixed to the side of the gun, but to operate in conjunction with a rotary charge receiver placed within the barrel, as specified, such arrangement of the magazine chambers, not only causing the powder of the charges to be kept in separate chambers so as to lessen the danger of accident, but causing the magazine to be so arranged as to be out of range of the sight in taking aim.

I also claim to so combine the percussion hammer or cock, the rotary charge receiver, and the rotary magazine with the trigger guard, that by the movement of the said guard away from the stock, they may be simultaneously put in motion, and the hammer brought up to full cock, as specified.

PLOW BEAMS—By L. B. Griffith, of Honeybrook, Pa.: I claim constructing a plow beam of four round iron rods, center piece and clamps, in combination, as described, the rods being of uniform size, from end to end curved to the shape specified and welded together at the places designated, the center-piece and rods being held firmly in their position by the clamps, as described.

SELF-ACTING SWITCHES—By A. S. Littlefield, of Portland, Me.: I claim the combination of the transverse rocker lever, the shaft, the toothed sector, and the rack, as applied to the switch, and the main and turn-out tracks, and made to operate, as specified.

And in combination with the toothed sector, I claim the locking plate, provided with notches, as specified, the same being for the purpose of locking the switch, as described.

CUTTER FOR BORING WHEEL HUBS—By L. S. Maring, of Westport, Mass.: I claim the combining the backer with the shaft, and the knife, for the purpose set forth.

FILES AND RASPS—By Hiram Powers, now residing in Florence, Italy: I claim forming perforations or throats to the cutting edges of files, or rasps, for allowing the particles cut away, to pass through, and to prevent the instrument from clogging or choking, as described.

[Mr. Powers, is our eminent American sculptor.]

MACHINE FOR TURNING SPIRAL MOULDINGS—By Philip P. Ruger, of New York City: I claim combining with a rotary progressive motion of the article to be cut a series of cutters placed around the article to be cut, of any desired configuration or varieties of configuration to form and complete the pattern upon the article, said cutters being made to revolve in a stationary frame perpendicular to the axis of motion of the article to be wrought, either in a radial line, or somewhat inclined thereto, so as to form the desired figure, and under-cut to any desired extent.

GOLD WASHER—By John H. Ward, of Sonora, Cal.: I do not claim washing or agitating the mass or earthy matter containing the gold in a tub, box, or cistern; nor do I claim simply washing the earth without a current.

I claim the employment of the reciprocating perforated trough, armed with cutters or breakers, in combination with the sieve and decanting trough, arranged beneath the reciprocating trough, and in combination with said reciprocating trough, I claim the percolating plate, arranged above the same.

PROPELLERS—By T. P. Ware, of New York City: I claim a propeller having one or more blades, the front and rear edges of which are of unequal stiffness, the blade or blades thus constructed being arranged upon an oscillating shaft, and operating as set forth.

GUIDE FOR DOWELLING FELLOES FOR WHEELS—By Wm. C. Dean, of Jacksonville, N. Y.: I claim the combination and arrangement of the tube, guides, and set screw, for the purpose of holding the wood and guiding the bit as set forth.

DAGUERREOTYPE PLATE HOLDER—By Marshall Finley, of Canandaigua, N. Y.: I do not claim holding daguerreotype plates to be buffed, by the outward pressure of spiral springs, against the turned edges of the plates.

I claim constructing a solid daguerreotype plate holder or block having fastenings at each corner made by spiral springs, in combination with tightening bolts, having concave heads into which the bent or turned corners of the plate to be buffed are hooked, so as to admit of a uniform buffing, as set forth.

MACHINE FOR JOINTING STAVES—By C. B. Hutchinson, of Syracuse, N. Y.: I claim, first, the use of the circular guide ways, in combination with the movable piers or bearings, and the cams or levers or other suitable means of moving the same simultaneously and equally along said circular guide ways, so that the saws or other cutters may be instantaneously adjusted for any required width of stave without stopping their motion or changing their direction towards a constant central point.

Second, I claim the use of the wing or leaf gauge, in combination with the index moving over a graduated arc or dial, both moving in connection with the saws, so as to indicate at a glance the width between the saws, and to guide the operator in setting the stave on its bed plate and in adjusting the saws.

Third, I claim the mode of jointing staves to any required bilge and bevel without bending or springing them by rotating them endwise, in a plane perpendicular to their width, between saws or other cutters, so inclined as to give the correct bevel, whether adjustable as above or not, said rotation being upon a circle or other proper curve, such as to present each part of the stave to the action of the inclined cutters at the precise point or height requisite to give it its exact proportionate width or bilge, the rotation being obtained by means of a central arch piece moving over rollers about a constant center of motion, as described.

[This is a very excellent improvement, and we hope soon to illustrate it.]

DECHLORINATING BLEACHED FABRICS—By J. A. Roth, of Philadelphia, Pa.: I claim the process of removing chlorine from fabrics by means of the solution described, and denominated ar ti-chlorine, or by means of any other solution substantially the same, as described.

LOOMS FOR WEAVING COACH LACE—By J. H. Merrill, of Richmond, Va.: I claim, first, the revolving plier, Q, constructed as described, and operated by the spindle, N, whirl, O, connecting rod, S, lever, W, and cams, U and V, in combination with the finger, A, constructed and operated as specified, wedge M and cylindrical stand, M, by which combination the needles upon which the pile is formed are seized, removed from the finished portion of the fabric, carried up, inserted under the colored warp selected by the Jacquard for the figure and, released, substantially as specified.

Second, the construction of the stationary shuttle box, as described, having its front sustained by and movable about the projecting rod, so as to operate the ungearing apparatus upon a miss-throw of the shuttle, in the manner specified.

Third, the combination of the sliding reed with the stationary shuttle box, when constructed and operating as specified.

Fourth, the combination of the notched wheel, Z, rock shaft, Y, and arms, T and P, with the lever, N, spring, C, shaft, L, rod R, and bar, M, arranged as described, for operating the ungearing apparatus, as specified, when a derangement occurs in the machinery operating the needles.

Fifth, the spring, K, as arranged upon, in combination with the rods, D, by means of which the strain upon the eyes of the harness is diminished, as specified.

COOKING RANGES—By John P. Hayes, of Boston, Mass.: I claim, first, the receiving box flue, formed under the oven, as specified.

Second, I claim so combining a movable oven sliding upon a stationary bottom through which the hot air is admitted, with the smoke flues about the same, as to cause the smoke, &c., to pass about and over the oven, and the hot air to pass into the same, as described.

MACHINE FOR PUNCHING METAL—By O. J. Davie & T. W. Stephens, of Erie, Pa.: We claim disconnecting the punch stock from the machine automatically at each operation of the punch, by means of the weighted lever and key, or their equivalents, for the purpose of affording the operator time to place his sheets without regard to the motions of the machine, when, by a slight movement of the ball or lever upon the rising of the punch, the connection can be again formed, as described.

CAMPHENE LAMP—By John Newell, of Boston, Mass.: I claim, first, the silvering of the perforated metal or brass, copper, or iron wire gauge used in safety lamps and cans, or other vessels designed to prevent explosions from the vapor of camphene burning fluid, &c., the silvering being applied for the purpose of preventing the corrosion of the metal or wire gauze, as described, by the most economical process.

Second, the introduction of perforations, as described, in the caps of lamps, used for burning camphene, burning fluid, &c., so small as not to admit the communication of flame through them, for the purpose of allowing the escape of the vapor formed within the lamp, from camphene, burning fluid, &c., and thereby preventing the bursting of the lamps by the pressure of the vapor.

I do not claim the use of any perforations in lamps for burning, camphene, burning fluid, &c., except such as are constructed, so as to prevent the passage of flame on the principle of Sir Humphrey Davy's discovery relative to the passage of flame through perforated metal.

[This excellent safety lamp is fully illustrated on page 268, Vol. 8. It is now in general use.]

PLANING MACHINE—By R. H. Prindell, of Fayette, Co., Ky. (assignor to Wm. J. Thurman, of Washington, Ky.) I claim, first, the combination of the differential velocities of feed motion, and the motion of the knives; that is, when their relative speed is such that the knives shall cut on their back as well as on their forward motion, as set forth.

Second, giving to straight-eged planes for dressing lumber, a partial reciprocating rotary motion about their own center, for the purpose as described.

Third, I claim a yielding pressure roller placed in front of the stocks, in combination with an endless planing bed, for the purpose of feeding planks, &c., to the planes, as set forth.

[NOTE—Eight of the patents issued in the above list were secured through the "Scientific American Patent Agency." Besides the large amount of home business, we have secured, since the first of last October, over sixty foreign patents, and have lost only ONE application. The Prussian Government refused to grant us a patent for a very useful invention applied for through our Agency in Berlin: no reasons were given, and no satisfaction could be obtained from the "old fogies" who preside over that Department. Prussia is evidently determined on the stand-still policy.]

RE-ISSUE.

SPARK AND GAS CONSUMERS—By David Matthew, of Philadelphia, Pa.: I claim the manner in which I have constructed and arranged the respective parts that constitute the inner and outer cases of the apparatus which is placed at the top of the chimney; also, I claim the manner of constructing and arranging the trumpet-mouthed tube within the inner case, said tube being divided into two or more parts, and being made to deposit and discharge the larger portion of the sparks by the aid of the opening between said parts, as described.

I also claim the manner in which I connect the apparatus at the top of the chimney, with the furnace or fire-box, by means of the tube or pipe G, the cases, and the openings thence into the fire-box or furnace, for the porpose as set forth.

I also claim the manner of preventing the entrance of water into the fire chamber, by the employment of the tubes, M, in combination with the tubes, H G.

DESIGNS.

BEDSTEADS—By J. H. Barth, of Indianapolis, Ind.

COOKING STOVE—By Julius Holzer (assignor to North, Chase & North), of Philadelphia, Pa.

STOVES—By G. H. Tryday (assignor to North, Chase & North), of Philadelphia, Pa.

STOVES—By G. Smith & H. Brown (assignor to North, Chase & North), of Philadelphia, Pa.

COOKING STOVES—By H. H. Huntley (assignor to D. F. Goodhue), of Cincinnati, O.

STOVES—By G. Smith & H. Brown (assignors to C. W. Warnick & F. Liebrandt), of Philadelphia, Pa,

Steam Boiler Explosions.

MESSRS. EDITORS—My attention has been drawn to some strictures by "An Engineer," in your paper of Sept. 24, intended as criticisms on a communication which I read before the American Association for the Advancement of Science, at Cleveland, in August last. There is a lack of courtesy and an offensive dogmatism of the engine room in these remarks which relieve me from all obligation to notice them. I think it due, however, to your more candid readers to copy from Liebig and Kopp's Report on Chemistry, &c., for 1847, a single paragraph which may be more convincing than anything I could say:—

"Donny has shown (Am. Ch. Phys. [3] XVI. S. 167) by a series of well devised experiments, that water possesses a tendency to evaporate only when exposed to a vacuum or a space filled with gas, and that the process of ebullition is induced by the air alone, which is present in the water. He succeeded in heating water previously freed from air with great care to 135° cent. (equal to 275° Fah.) without inducing ebullition. His experiments certainly prove, in a most convincing manner, that a space filled with gas or a small bubble of air, is absolutely necessary for the evolution of steam in the body of the water, and that accordingly the process of ebullition, in its principle, coincides with that of evaporation."

No one who has examined Donny's experiments, can doubt his conclusion as thus stated. Perhaps this may be entitled to more weight than even the *assertion* of "An Engineer," and perhaps if he had understood me, in some slight degree, he might have saved me this labor of citation.

I am unfortunate, Messrs. Editors, in having been imperfectly reported, and also in having been put first in the Topographical Engineers and then in the Navy, whereas I am simply a Lieutenant in the Corps of Engineers, U. S. A., and would not have our honored Navy or the Topographical Engineers held responsible for any short-comings of mine. Yours, &c.

E. B. HUNT.

Renton's Process of Making Iron.

The papers at Cleveland, Sandusky, and Detroit, are much occupied with a discussion of the results arrived at by the introduction of Renton's new process of making wrought iron direct from the ore by the use of mineral coal instead of charcoal. It appears that a quantity of the Lake Superior iron ore was sent by the Cleveland Iron Company to Cincinnati, where it was manufactured into iron by a new process, in a furnace built by W. C. Davis & Co., under the superintendence of the patentee. A few weeks ago, a trial was made, and during the first six hours 1,249 pounds of blooms were made out of 2,436 pounds of ore. A portion of the iron was rolled into bars, and was found, by severe test, to be an article remarkable for toughness. Similar results were attained with Ohio and Virginia limestone iron ores. According to the Cleveland Herald, the new process economizes fuel, as by measurement it only takes one and a half tons of mineral coal to make one ton of blooms. By this method the Ohio ores will yield about forty per cent. of iron and the Lake Superior ore from fifty to sixty per cent., and the cost of making a ton of iron will be considerably reduced.

Gen. Talmadge, who has been for so many years President of the American Institute, is dead. He died very suddenly in this city, on Thursday, the 30th ult. He was no ordinary man, and at one time possessed considerable political influence in this State.

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New Inventions.

Improved Mortising Machine.

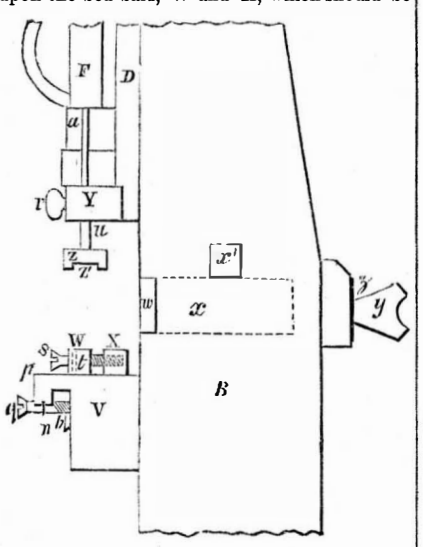
The annexed engraving is part of a side elevation of a mortising machine, for which a patent was granted to Fergus Purden, of Baltimore, Md., on the 14th of last June, 1853. The nature of the improvement consists in making the bed piece in two parts so that it may be adjusted to mortises in different positions and of various widths, to allow the chips to escape from the under side of the piece mortised.

B is the post of the machine; it is represented as broken off at the top and bottom, and the improvement only is represented. D is a slide fastened to the post. F is the tool stock fitted to turn in a box, *a*; the upper end turns on a pivot. Gearing on the upper part of the tool stock gives it a rotary motion. The lower end of the stock, F, has a triangular socket in it to which the shanks of the drills or chisels may be fitted. For small drills and chisels a chuck is used.

The traversing bed, V, is supported and fastened in the desired position by the bolt, *n*, which traverses in a vertical slot in the post, B. There are two slides, *p* (one seen), fitted in grooves across the front of the bed, V, which are moved by two screws, *q* (one seen); W is a traversing bed bar; it is fastened to the slides, *p*, so as to be traversed on the bed, V, to adjust the divided bed in relation to the mortising cutter. The bed bar, W, is perforated by the screws, *s s*, which are fitted to turn freely in it. The dotted lines, *t*, represent pins in W, to prevent the screws, *s s*, from slipping endwise. These screws work in left-handed nuts in the other traversing bar, X (which lies upon the bed, V), for moving the said bar, and to adjust it as the width of the mortise requires, so that the bed pieces, W and X, support the sides of the mortise when the chips are forced out by the cutter.

The stand, Y, is fastened to the post, B, and holds the rod, *u*, which may be placed as desired and fastened by the screw, *v*, so as to hold the stop, Z, in the required position to prevent the material mortised from being raised by the chisel or drill. The stop, Z, has a score, Z′, on its under surface to allow the ends of the chips which rise above the surface of the material operated on to pass freely under the stop. The adjusting bar, *w*, is fastened to the slide, *x*, represented by dotted lines, which slide traverses in grooves in the post. It is operated by a screw, *y*, which is fitted to turn on plate *z*; it adjusts the bar, *w*, to bring the material to be bored or mortised, and which is set against it, in a proper position under the drill or chisel. When the slide, *x*, is adjusted it may be fastened by the key, *x′*.

The piece to be bored or mortised is placed upon the bed bars, W and X, which should be



so adjusted that the drill or chisel will pass between them when it goes through the piece. The stop, Z, is set to prevent the piece from being lifted by the tool, when raised to draw it out. The score, Z′, in the stop, Z, allows the ends of the chips in the mortise, which project above the surface of the piece under operation to pass freely. When the piece to be mortised is reversed, the chips come between the bars, W and X, so that they are pushed out of the mortise, between the bars, by the chisel, in making the mortise, on the opposite side without interrupting the work or the operation of the machine.

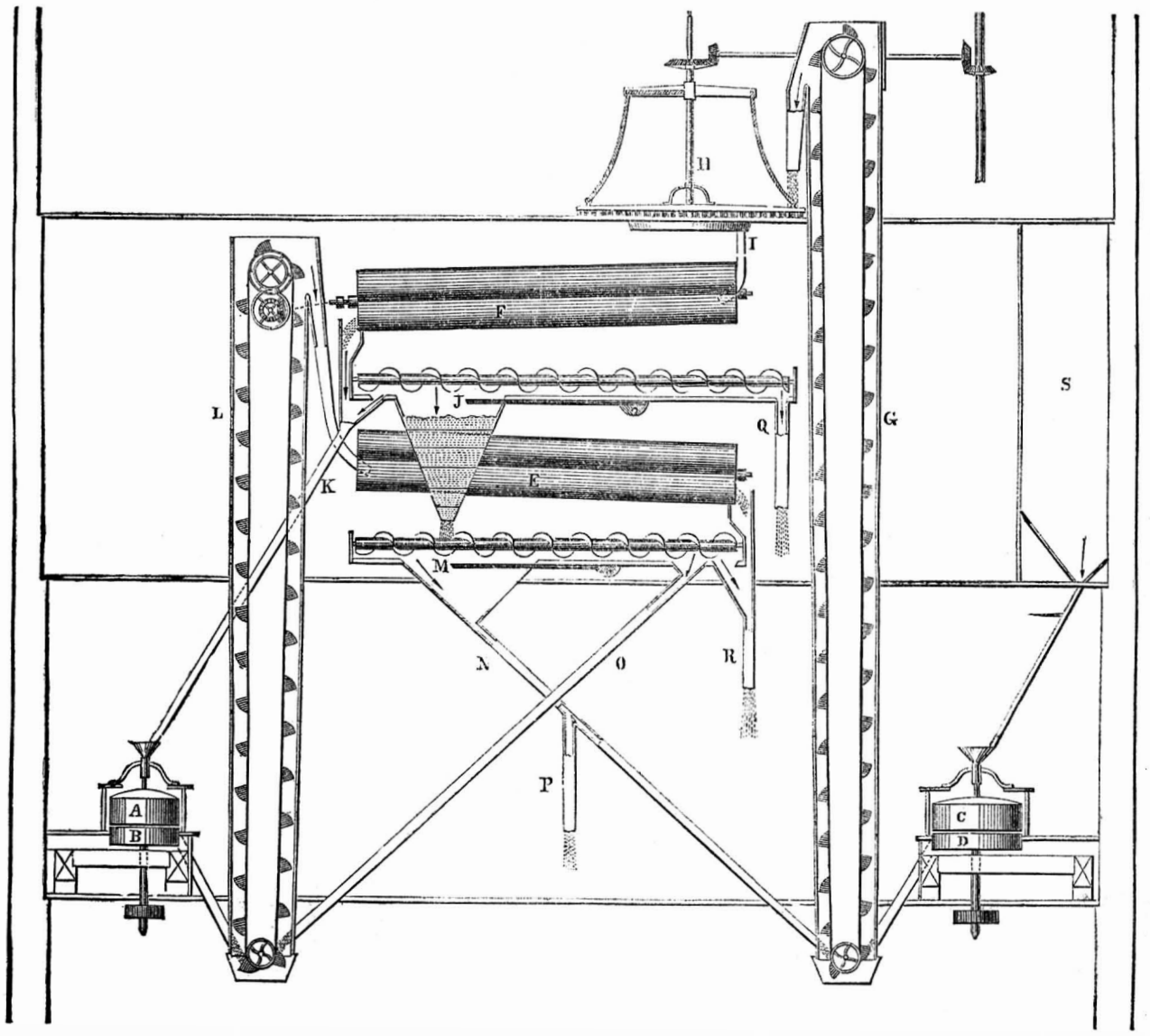
The claim is for "the divided bed so constructed that it can be adjusted to suit the width of the mortise to be cut, to prevent the side of the mortise from being splintered by the cutter or chips, when they are forced through and driven out on the under side."

More information may be obtained by letter addressed to the patentee.

New Spoke Machine.

Andrew B. Carlin, of Allentown, Pa., has taken measures to secure a patent for an improved machine for turning spokes for carriage wheels and other like articles. The improvement consists in giving to the carriage on which the stuff is centered to be turned into spokes, an up and down motion to and from the cutters, so as to give the ovalate form to the spoke. The feeding carriage is formed in two parts connected at their outer ends by a hinged joint, the lower part is vibrated at certain times to a greater extent, and by a separate mechanical device, than the upper, for the purpose of making greater depressions in the article to be turned, at certain points. The cutters are of a gouge shape, and revolve on an arbor; the stuff also revolves against the cutters, and a cam gives the feeding carriage its proper motion to feed the stuff so as to turn the spoke into proper form. By a different cam—which is the pattern—than that used for spokes, other articles of a different shape may be turned in this machine.

BONNELL'S FLOURING PROCESS.



The accompanying engraving is a vertical section of a mill, which illustrates the process of flouring, for which a patent was granted to David P. Bonnell, of Indianapolis, Ind., on the 14th of August, 1849, and re-issued on the 5th of last July.

The grain is drawn from the garner, S, into the main mill stones, C D, and being ground, is carried by the elevators, G, to the hopper boy, H, and through the spout, I, to the first or superfine bolts, F, when by means of the conveyor, the superfine flour is thrown out at the spout, Q, and the returns taken off at the slide, J.—The offal and specks at the tail of said bolt goes as directed by the arrows, down the spout, K, and is ground by the auxiliary mill, A B.—It is thon carried by the elevators, L, to the head of bolt, E, and the clear flour taken off with the conveyor at the slide, M, and sent with the returns from bolt, F, down the spout, N, and up elevators, G, to the hopper boy, H, when it is again re-bolted through the bolt, F, and incorporated with the superfine flour, or it may be taken off at the spout, P, and made into a separate article of improved Graham, or other flour, leaving that produced by the bolt, F, an extra, or double extra, article. Towards the tail of bolt, E, the returns are sent through the spout, O, to the elevator, L, and thus back to the head of bolt, E, and the bran and brown specks at the tail are discharged through the spout, R, and sent to any succeeding bolts or dusters desired, where the same rule should be observed as above, to wit:—Send the flour from the head of each bolt, back to the head of the one bolt preceding it—the middle to its own head, and the tail to the head of the next that succeeds it.—There should be a small garner over the auxiliary mill, A B, to hold a few bushels of offal, so that any irregularity of the supply from the bolts may be overcome and the stone not be permitted to run dry. The bolt cloth for this plan should generally be No. 9 and 10, except for separating the feeds, and the slides under the conveyors should move far enough to permit the miller to divide his flour and returns according to his own judgment and discretion, and a barrel of good superfine flour may be made from four bushels clean and good wheat, or a large proportion of the flour may be made into extra, with very little, if any more wheat to the barrel.

Further information may be obtained by letter addressed to M. A. Patterson, of Tecumseh, Mich., D. P. Bonnell, Indianapolis, Ind., George Arnold, of Gettysburgh, Pa., and Hiram Dodge, of West Point, Ind.

We shall publish either the full, or a well digested abstract of Mr. Bonnell's patent specification in one or two future numbers, commencing with our next; it is a very important subject.

Locomotion by Compressed Air.

Mr. J. Nickel, a correspondent of the American Journal of Science, communicates the details of a secret invention for locomotion by compressed air. He says, "the inventor, M. Julienne, believes that it will prove an economical motive power of great value. What I have seen of it satisfies me that obstacles which have till now opposed the employment of the expansive force of compressed air will disappear through the process of M. Julienne, which consists simply of compressing air by means of an hydraulic press.

By this method M. Julienne substitutes for the *solid* piston, which a grain of sand may alter, which the slightest irregularity in the pump would throw out of action, and which becomes heated by friction—a liquid piston, not less incomprehensible than the other, filling always exactly the space in which it moves, be it regular or not, and acting by progression on a resistance so exactly calculated, that its proportion, although increasing, is always in relation to the force to be overcome.

The air is thus compressed at thirty atmospheres, in iron bottles, which are about four millimetres thick.. It is perfectly preserved under this pressure, and it was with a bottle of this kind that M. Julienne put in action, in my presence, a small vehicle carrying two persons, and moving with great rapidity."

No man possessing a grain of engineering knowledge, would have made a statement like the above. The compressed air surely cannot give out more power than the quantity employed to compress it. Why then not apply the mechanical power employed to condense the air direct to the propulsion of machinery, instead of uselessly employing expensive machinery to apply it second hand. It reminds us of that wisdom displayed in two or three places that we might mention, in the employment of a steam engine for pumping water up a height to drive a water wheel.

The Flax Cotton Factory, at Cohoes, N. Y., was destroyed by fire last week. The flax cotton was used in the factory, along with cotton and wool, in the manufacture of knit fabrics.

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Scientific American.

NEW YORK, OCTOBER 15, 1853.

Colors of Calico---Chemical Questions.

A correspondent propounds the following questions. First, "what is the reason that blue figures on the muslin prints of ladies' dresses, will, when exposed to the sun, lose their color, which will be restored again when the goods are hung up in the shade? Second, is there anything known which can be put into the water in washing calico, or other dresses, which will make the goods retain their colors?—Such knowledge would be a great blessing to every mother and housewife."

These are very plain and apparently very simple questions, and as many think that those who are acquainted with the sciences, should be able to solve any question in science; it may be expected that we should be able to answer the above, to explain the phenomenon described in the first question, and tell how to fulfill the desires expressed in the second. No man can give a direct answer to the first question, and we cannot give an affirmative answer to the second. The more knowledge we acquire, the more fully are we impressed with a sense of man's ignorance of *causes* in the physical world. If any person were to ask of us, "what is color?" we would have to answer, "it is something, nothing." We are cheered with the prismatic glories of the lovely bow which arches the heavens above us; we are delighted with the hues of the rose, the violet, the dahlia, the tulip, and the modest daisy; we drink in pleasure by feasting our eyes on the foliage of the forest, the dancing butterfly with his variagated beauties, the humming bird on azure wing, and the purple and golden clouds which mantle the western sky. And yet these delights and pleasures are derived from that which has no material existence in itself. Color is a quality with which the Great Author of Nature has endowed matter, to give his creatures pleasure, and to enable them to distinguish between different objects; it may be called the chemical quality, as form is the mechanical quality, to distinguish objects.

The *blue* on the goods referred to by our correspondent, is one with which we are not acquainted; we have seen indigo, copper, logwood, and prussian blues exposed to the sun and never saw the colors destroyed by such exposure, and again restored by transferring them to the shade. There are various kinds of blues, both printed and dyed; that is, they are produced by different substances, such as indigo, copper, prussiate of potash, and logwood. The sun affects every color on goods; it bleaches turmeric and annatto yellows in a very short time, but indigo blue is what is called a fast color. Those colors which are called "fugitive," cannot resist the action of soap and hot water, and sun exposure; those named "permanent" can stand both of these tests. Colors on goods are formed by substances which adhere with great mechanical tenacity to the goods on which they are printed, and reflect the different rays and sub-rays of light. There are only three primative colors, namely, red, blue, and yellow; these mingled in different proportions, form all the tints and hues which adorn Flora's mantle. We do not know *why* it is that the sun light affects colors in the manner it does, we only know by experience that it does so. It would have been as puzzling for us to answer a more radical question than the first one propounded; namely, "why is it that there is such a color as blue," or why is it that two yellow substances, when combined together, will produce a salt which will reflect the blue ray of light—a blue color—or why two other yellow substances when combined together, will produce a black solution. A solution of the oxyde of iron and the prussiate of potash will produce a blue; a solution of the oxyde of iron and sumac will produce a black solution. The action of the rays of light—actinism—as as it is now named, in relation to color, is something respecting which but little is known, excepting such experience as that of our dyers, calico printing chemists, and photographers.

There is no substance which can be put into water during the washing of calicoes or dresses to prevent the color from fading, but we will give some directions for the washing of delicate colors, in muslin or other textile fabrics, which we have no doubt will be a benefit to many. Never wash goods having delicate colors in warm suds; nor rub bar soap on them at any time.—Dissolve some soap so as to have strong suds, and set it aside until it is quite cold; wash the goods in this, and when the dirt is all removed wring out and rinse well in clean cold water; be sure and not have the suds too weak, or the soap will be decomposed and stick in the goods like hard tallow. After wringing, finish out the dress or goods in a vessel containing some alum dissolved in clean water, or some alum water stirred among the starch. Wring out well and dry in the shade. Strong bran water—bran boiled in water and left to cool—is very excellent for washing delicate muslin dresses. Some use ox gall for washing fine woolen goods, but cold strong soap suds are better. Be sure and rinse the soaped goods or dress clean in soft water, and squeeze well, so as to take all the soap out. Soap has a tendency to *blue* red colors, and to fade the blue in green colors; alum restores the color; in other words, so combines with the substances in the calico, to reflect the green, which is a mixture of the blue and yellow rays and also the red ray, which is a primitive color.

Every single color can be produced by many different substances, some of which make fast and some fugitive colors, and it requires a great knowledge of practical chemistry, to tell what color is fast, and what is not, on a piece of goods. The application of chemistry to the arts of coloring textile fabrics, encircles the largest area of practical chemistry, and yet the teachers of chemistry in our colleges, are in general very ill-informed about it.

American and Foreign Reaping Machines.

Although the British reaping machine of the Rev. P. Bell, as noticed by us, in its trial this year before the Royal Agricultural Society in England, in competition with our countrymens', McCormicks and Hussey's, bore off the prize, we are of opinion that in many respects it is not equal to the American Reaping Machines. There is also no resemblance between them, and those who have said the Americans borrowed, because Bell's was some years older, have been entirely mistaken, Bell's reaper cuts with a clipping shear motion, the American machines cut with a sawing action. Bell's machine is driven before the horses (which push it) the American machine is drawn by the horses. The Scotch reaper uses a reel and carries the cut grain away by an endless apron, but McCormick's machine lays down the cut grain in gavels at one side. In the late trial before the Royal Agricultural Society, the judges were pleased with Bell's reaper because the horses did not tread down the grain, and really because it cut better than any machine on the ground; but we are inclined to believe that this was greatly owing to the superior construction of a single machine, for in a trial before the Highland Agricultural Society, in Scotland, on the 6th of last month, although Bell's again took the first prize, the second was awarded to McCormick's, who had only a single machine, while there were three of Bell's, two of which were surpassed by the American one. There can be no doubt but Mr. Bell deserves great credit for his invention; we would not pluck a single chaplet from his brow as a most deserving inventor, and we do not when we say "the American reaping machine is superior to his in many respects;" we only do justice to the latter. For example: it is very difficult to set and keep Bell's knives in order; his machine is also heavier and more complicated, and certainly all our reapers are heavy and clumsy enough. The American machine therefore is less expensive at first, and is easier kept in repair, and these are very important considerations for all agriculturists. The judges of the Highland Agricultural Society speak of McCormick's machine in the most flattering terms, and do not seem to be tinctured with the least prejudice as to its American birth. With respect to all the reaping machines we have yet seen; it is our opinion that there is great room for improvement on the very best of them.

By English and Scoth papers recently received by us, we perceive that Mr. McCormick has arrived in Scotland, and challenged Bell's reaper to another trial. The challenge is not in the form of a bet, but couched in the respectful language of a lover of fair play, and one who has confidence in his own invention. We have also received a very able paper on reapers, which was read before the British Association of Science; an abstract of this will be presented in a future number of the Scientific American; it is full of interest to our readers.

Anthracite Coal for Locomotives.

With very few exceptions, wood is the only fuel used for locomotive engines. It is becoming so scarce and dear that some substitute must be sought. Anthracite coal suggests itself first, because it is the cheapest and most free from smoke, waste, &c. An impression, however, has prevailed among those connected with railroads, that this fuel destroys the steam fire box so quickly, that it cannot be used with economy. Other objections are understood to exist, growing out of the intensity of the heat, such as starting the bolts of the boiler, &c. But all of these objections have been removed by the Millholland engine, of which we have made mention on more than one occasion during the past two years. There are now in daily use on the Reading Railway, Pa., (running between the Schuylkill Coal Mines, and Philadelphia) twenty-eight first class locomotives on the Millholland plan; these use anthracite coal exclusively.—Two of them carry passengers at the rate of thirty miles per hour, and each of the rest draws 980 tons of coal—a load—at the rate of twelve miles per hour. The average consumption of coal per engine for the trip, down and up (190 miles) is only four and a half tons, in place of nine cords of wood. The monthly consumption of coal on this road is 2,000 tons. No engineer will run a wood burning locomotive if he can get a coal burning one. The coal burning engines cause far less work to engineers and firemen than wood burning ones; they also make better time. We are not making statements relating to mere experiments, but stating facts respecting an adopted system on one of our railroads, and presenting proofs of its constant practice for three years. Every new engine built for the Reading Railroad for the last three years, burns anthracite coal, as will every new engine constructed for it. Six new locomotives on Millholland's plan, are now being built at the Company's workshops at Reading, their cost being the same as other locomotives. By a very simple contrivance the fire box is protected from injury, and by the arrangement of a gas chamber behind the bridge, most of the carbonic oxyde which escapes, is caught by jets of hot air and consumed. Within two years every wood-burning engine on that road will be altered to burn coal. These facts, derived from reliable authority, will tend to convince those interested, that anthracite coal has proved to the satisfaction of this great railroad company, to be the best fuel for locomotive engines in every respect; and by far the cheapest for them. As coal bears the lowest freight charge, this company has to work with a closer economy than any other, it therefore seems reasonable that other railroads should place some confidence in the judgment of its managers, in the settlement of this important question, "which is the best fuel for locomotives?"

Association of Steamboat Engineers.

The engineers of the South and South West formed a grand Union Association at Louisville, in the month of last March, by delegates from St. Louis, New Orleans, Louisville, Cincinnati, Nashville, Pittsburgh, Mobile, and New Albany.

In August the delegates again met and revised the grand constitution, and adopted a constitution and by-laws for the regulation and government of the subordinate associations in the several ports within the jurisdiction of the Grand Union. On the 29th of August a local Association was formed at Cincinnati, and the "Atlas," speaking of it, says:—"Since the passage of the United States law, for the better regulation and preservation of lives and property in steamboat navigation, a marked improvement has been observable in the character and fitness of the Pilots, Captains, and Engineers on our Western waters, and a disposition evinced by the worthiest of each profession to elevate the standard of their calling." At a recent meeting of the Cincinnati Association, Mr. Hall, Grand Pres't., was present and made an excellent speech. He stated that the rules were that the local Associations are to sign a recommendation for any one to receive a certificate from Government Inspectors as Engineer. After application has been made and referred to a standing committee, who, on examination and finding him worthy, may direct the President and Secretary to give the applicant a certificate of recommendation under the proper seal and signature of the Association. Associations may be formed whenever seven Engineers make application to the General Union. Many unworthy Engineers had obtained licenses, and were availing themselves of their licenses to reduce the wages of Engineers to such a standard that the Association could not recognize, and was too low for capable Engineers to live at. This evil, and the lamentable ignorance of the higher principles of the profession, it was the object of the Association to remedy, and to promote the safety of passengers and property on boats.

Captain Haldeman, one of the Government Inspectors, was called upon to give his views in reference to the Association, and congratulated the Engineers present, who were quite numerous, at the favorable change noticeable in their body, and at the indications of a higher appreciation of themselves as men and representatives of an honorable calling so intimately connected with the safety of the travelling community. He heartily sympathized in the objects they had in view, and wished them success. After reviewing his own experience as an engineer and captain for thirty-years, and bearing testimony to the practical and successful working of the United States law, as he stated that in twenty-five years there had been sixty explosions and a loss of more than three thousand lives, but that in this the Seventh District, since the enforcement of the late law, not one life had been lost by explosion.

This accords well with the views expressed in a letter from an engineer on another page. It affords us no small amount of gratification, that this New Steamboat Law, of which we were the sincere advocates, has done so much good already. To our engineers, let us say, never let down your standard but always keep elevating it higher and higher. Never cease to be vigilant; do not grow cool on the subject, and never suffer yourselves to be disunited,—"Union is strength."

Competitors for the $450 Prizes.

We hope none of the competitors for the liberal prizes offered for the largest lists of subscribers, will lose the object sought for, from want of proper vigilance. We notice that some who sent the largest lists at first, are being excelled by those who commenced by sending ten and fifteen subscribers,—thus showing that it is not safe to rest upon your oars, relying upon your fine start as surety for success. Some who started by sending only five subscribers, have now fine lists appended to their names on the prize book. We have no doubt more than one will feel chagrined when the names of the successful competitors are announced next January, that they did not exert themselves a little harder, and thus carry a prize. It stands you all in hand to be up and doing, Messrs. Competitors, or some of you will be likely to have feelings of remorse at your laxity, when the day of reckoning comes,—that day will not be extended beyond the time announced in the prospectus published on the last page of each number of this paper.

India Rubber for Steam Packing.

Lewis Martin, engineer and machinist, No. 57 Cherry street, Philadelphia, informs us by letter, for the benefit of others, that he has made a number of experiments with vulcanized india rubber for steam packing, in all of which he found it to fail signally. He tried it in a six inch piston, under metallic rings, and in many other ways, without success. It is too sensitive to heat. He found it, in many cases, to make a very good and tight joint, but not as the packing of a piston in a steam cylinder.

An American is erecting a large machine shop at Honolulu, in the Sandwich Islands

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Geology.—The Geological Department in the Crystal Palace is now open; it is in a small room in the south east corner—entrances from the Machine Room. We do not know why so much delay was experienced in the completion and opening of this branch of the Exhibition; the reasons, no doubt, are good. If the value of this department were measured by its extent, it would be estimated at a very low figure, as it is embraced within a few feet square, but in one single small case, there is enough of gold to purchase most of the machinery in the Exhibition. Gold is here to be seen in coins, in blocks and bars, in lumps pure but water worn; in beautiful volcanic feathers mixed with quartz, dust in numerous vials, and scattered in glittering grains; all giving evidence of those teasures in our new dominions on the Pacific, which have allured so many thousands from their old homes and parents, to establish new and powerful States beyond the Rocky Mountains. This case of gold, as is quite natural, is continually surrounded by a group of wondering admirers, but there are other cases pessessing more interest to the man of science who reads the history of our earth in the stony language of ganoid, placoid, cycloid, and ichthyosaurus.

There are some beautiful specimens of ammonites obtusus from the aolitic system of England in one case, and in another we have the evidence of a time when volcanic agencies were busy in the now quiet bosom of Maryland. From every State, we think, there are specimens of its minerals, such as copper and silver from Lake Superior; lead from Illinois and Wisconsin; iron from Missouri and Ohio; Cannel coal from Virginia; the famous oil stones of Arkansas; Alabama marble; chrome and coal from Maryland; anthracite coal and iron from Pennsylvania; copper and iron ore from New York; iron from Massachusetts; brass faom Connecticut, and mica from Vermont and New Hampshire. The specimens are choice selections, and convey a most excellent idea of the richness and varied mineral wealth of our country. The United States of America are richer in mineral resources than any other country of the same extent in the world. We are positive, as we have heretofore asserted on more than one occasion, that our country, in every respect, is soon destined to be the most powerful nation in the world; it is, indeed, second to none now—but soon it will be "the first." Let every visitor examine the Geological department with care and a desire to profit. To the Superintendent let us give a word of advice: label your cases with more care, for instruction—especially the specimens from Germany. If a few words of explanation were added to each name, the majority of visitors would derive an additional benefit to the mere feasting of eyes.

Straightening Railroad Iron—A very valuable machine for straightening railroad iron is exhibited at the south end of the Machine Room, by George Williston & Co., of Brunswick, Me. Its object is for straightening curved railroad iron, as it lies upon the track, by which no less than seven-eighths of the labor is saved from the old method for this purpose. Of this we have no doubt from the nature of its operation, viz.—screw pressure and a straightening bar.

American Wire—In many branches of iron manufacture, our country has advanced with rapid strides, and now maintains a distinguished postion; this is especially the case with the manufacture of iron wire. There are some packages of wire on a table near the middle of the Machine Arcade, on the east side, which deserve more than a passing glance from every visitor. They were manufactured at the Trenton Iron Works, Trenton, N. J. In quality they are unsurpassed, and in variety they show the perfection of machinery used in their manufacture, and the ductility of the metal employed. There are some specimens, we should judge, about half an inch in diameter, while there are others so fine and beautiful, that they resemble silver hairs. In one package of 2 lbs. there are 6000 yards; and in another package of one pound 12 oz., there are 4000 yards—or 143½ yards in a single ounce of iron. We do not know what iron this wire is made from, but it must be excellent. These works supply the wire now used for the new suspension bridge over the Niagara river, below the Falls—the engineer of which is John A. Roebling, of the works where the wire is made.

Imitation of Russian Sheet Iron.—Above the wire from Trenton, N. J., are some fine samples of American sheet iron manufactured at the McKeesport Iron Works, Allegheny Co., Pa., by the patent process of Messrs. Wood.—This sheet iron is good, but not to be compared to the real Russian. The improvement which has been made by the Messrs. Wood is an evidence that other improvements can be made in our country, and it may be reserved for the McKeesport Iron Works, to come up in every respect to the genuine Russian. It is very singular, that although the discovery of the Russian precess is said to be known to different persons in our country, still no article has been manufactured to prove the full truth of such allegements. In our list of patents last week, one was for machinery—planished rollers—to give sheet iron the mottled appearance of the Russian; whether it will do so or not, we cannot tell; we can only say, from the samples we have seen, that a great stride has yet to be made before any of our manufactures will rival the original.

FRENCH BRONZE PITCHERS.

These illustrated Pitchers are from the establishment of M. Villemsens, of Paris, worker in bronze, and manufacturer of church ornaments; the latter branch of business, especially, being largely carried on by this house. At his extensive show rooms in Paris, there exist a vast variety of objects, exhibiting, more or less, taste in composition, and ingenuity of workmanship; these are principally executed in bronze, and in brass, adapted as well for the embellishment of the private dwelling as for purposes of ecclesiastical use and decoration,—statues, vases, chandeliers, candelabra, delicate rail-work, &c. The three bronze vases and dish engraved are distinguished by beauty of outline and elaborate ornament, approaching very closely to the best antiques. In the manufacture of such articles the French are pre-eminent.

Inventors' Meeting.—As stated by us last week, a number of inventors having articles on exhibition at the Crystal Palace, have commenced the organization of an association named "The National Inventors' Union." They held four sessions, Mr. Clayton, of Va., in the chair, and passed the following resolutions:—

Resolved, That we, the inventors of the United States, do form ourselves into an Inventors' Union, to be known as the "National Union of the United States," inventors only entitled to membership. Honorary membership may be conferred on others by a vote of Society.

Resolved, That the objects of the Union shall be to assist each other by defining our rights and maintaining them; and, secondly, by righting our wrongs, by seeking redress from our unjust grievances.

Resolved, That as an original idea is transcendantally more difficult to invent than to improve thereon, we mutually pledge ourselves to protect original inventors in their inventions, and that we will strive to obtain a more protective patent law than at present exists for said above purpose.

Resolved, That as civil governments are institutes for the protection of their citizens in the entire use of property, we do not see the justice or propriety of a discrimination as to what a man shall call his own, whether he obtains it by his inventive genius or the labor of his hands. We, the inventors here assembled, regard the one as much as the other, and he ought to have the benefit of it. [The words "for ever" were originally appended, but were subsequently dropped.]

Resolved, That as the Patent Office is created expressly for the benefit of and supported by inventors, its laws ought to harmonize with their wishes, and render all facilities in forwarding their designs, and that we will use all honorable means to make it what we believe it ought to be, namely, a reflection of the inventive genius of this great Republic.

Resolved, That all inventors of the United States are requested to become members of this Union; as our interests are one, it is hoped that our concurrent action will be mutual.

Clinton Rosevelt offered the following amendment to the 5th resolution:—

Resolved, That as the Patent Office was established for the general benefit and protection of inventors in their discoveries, and as those objects ought to be accomplished, but the laws have failed heretofore, an entire revision of the Patent Laws is demanded, as well by the public interest, as by those interested in the Patent Laws.

This was rejected.

In the discussion of the different resolutions as presented for adoption, much bitter feeling was expressed against the Examiners in the Patent Office. One inventor declared that "many of them were not competent; that there were too many doctors, and too few mechanics, and that in the appointment of the corps in the Patent Office, he considered that injustice and injury had been done to the mechanics of our country."

The fourth resolution as originally proposed and the views expressed in its discussion, show to us that there are many who have not correct views of the property of patents They claim for an invention that it should be like real estate, and be the property, *forever*, of the inventor and his heirs. Now, the property of inventions is entirely different from that of real estate, and the two should never be compared together.—The property of real estate is in the tangible material, that of invention is not in the material, but in the idea develop ed, and this is the light in which the law views it. If a man makes a machine like that of another man who has a patent for one like it, and although it may have cost the former a million of dollars in construction, and the latter nothing, yet the maker dare not use it, because it embraces, in construction, the ideas first developed by the patentee; it is not so with real estate. We might say more to illustrate this point, but we forbear at present. We wish to impress the minds of invontors with correct views upon such matters, as we are confident that wrong views do more to injure inventors, than anything else.

Whether the inventors at the Crystal Palace will be able or not to form a permanent Inventors Union, we do not know; neither are we prepared at present to pass an opinion upon what may be anticipated; but unless the association is formed of a different class of inventors than what have attempted similar objects before, we predict the same results will follow, viz.—that the Inventors Union will end in smoke.

Topographical Map of the Crystal Palace.—H. L. Stuart has just issued a very comprehensive and excellent map of the Crystal Palace, which must prove valuable to every visitor, as it shows at a glance the different departments, and points to all the most attractive objects on exhibition. It has evidently cost the author much labor and care in its preparation, and is sold for the trifling sum of 6¼ cents.

The stock of the Crystal Palace Association sold on Saturday last at $55 per share; nine months ago it sold readily at $165. So much for injudicious management on the part of the Directors.

The number of admissions to the Crystal Palace on Saturday was nineteen thousand nine hundred and forty-five, of which 17,525 were single admissions.

An extensive mine of plumbago, or black lead, has been discovered on the lands of O. P. Newell, in Nelson, N. H.

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TO CORRESPONDENTS.

H. W. Jr., of Va.—Tredgold's work on the Steam Engine is the best we know of, but it is very expensive; Scott Russell's and Lardner's are very good for cheap works.

G. R., Jr., of Pa.—The application of a movable flange to a car wheel is not new, and we doubt whether it would be of any practical value.

P. M., of Md.—Your device for fastening window sash is not patentable; Nim's patent covers essentially the same thing.

F. H. S., of Md.—We will attend to your request for an engraving of the Kiln.

C. C., of Pa.—There is no novelty in your press, it is the same as Bullock's.

L. & B., of Ohio—Engravings of machinery are not admitted into our columns without having letters of reference to enable us to fully describe them. Old inventions we must avoid as much as possible; if you have any thing new send it on.

E. M., of Ill.—You should, in our opinion, have received a patent; you must send for the papers yourself to the Patent Office, and get the gentlemen you mentioned to assist you.

Porter & Mercer, of Baltimore, Md., want a good machine for making wrought-iron spikes.

R. D., Sr., of Ky.—Your inventions may be very useful, but we are unable to judge from the description given. If you have not the means can you not employ some one to aid in testing them?—this we recommend you to do.

B. A. & Co., of Ohio—We cannot inform you where such a work as you want can be obtained; we presume it is an English publication.

Col. H. R. B., of Wis.—We thank you for reminding us of our neglect in not thanking you for the five subscribers sent us at different times. We have many such valuable friends, so many in fact that we are unable to address them all personally, therefore to testify our gratitude we thank them all together.

G. M. K., of N. Y.—We were aware of a bill having been introduced into the Canadian Parliament during its last session, to reform the Patent Laws. We hope it will pass at the next session:—we have been coresponding of late with influential Canadians upon this subject. Legislation now-a-days is little to be depended upon for any thing like reform.

R. L. J., of La.—We are well aware that every improvement in the manufacture of sugar, is a blessing to our race; we hope your experiments will be successful, in a safe substitute for lead in any shape, as a purifyer.

G. C., of N. Y.—Nine square feet of heating surface in a boiler is allowed for every horse power.

B. R., of N. Y.—There is nothing patentable in your press. No name being signed to your letter it will not be preserved; we should not have answered it had we not supposed you ignorant of the rules which usually govern editorial offices, viz., to reject all unsigned communications.

E. F. W., of Conn.—For the want of time we cannot furnish the information you solicit about the chuck.—We are not in the habit of taking cases for investigation, unless they bear upon pending applications for patents, or on subjects requiring public discussion. Our other duties forbid it.

J. S. W., of Iowa.—The double shovel plow seems to be a new thing, and we think well of it. The sketch of the corn planter is a poor thing, and conveys scarcely any idea of the invention. From what we understand of it we see no new feature in the arrangement.

A. B., of Ohio.—You could not use Mr. Ralston's invention without liability to pay him for the right. His claim is supposed to be good until a similar and older device is shown. Your method of separating, if new, is patentable. We will give our opinion on this point upon being furnished with a sketch and proper description.

D. D., of Ill.—No advantage can be gained from your proposed plan for converting reciprocating into rotary motion. The endless chain pump and the scraper, do not possess any thing new, but the door fastener is new, we think, we do not know of anything like it. You had better send us a model.

R. E., of Ohio—We call your attention to our list of valuable prizes offered for the largest number of subscribers. You are in a position to furnish us with a very large list, and gain for yourself a handsome prize. We hope our friends generally will not allow so good an opportunity to pass without making earnest efforts.

L. & M. T., of Wis.—No application can be considered at the Patent Office until a model, specification, and drawings are furnished, and the fee of $30 paid.

A. D., of Mass.—Newell's Lamp has been advertised as a patent; we were aware of this, but no patent was issued until the 4th inst. Inventors should be careful about advertising their inventions as patents before letters are issued.

J. G. P. & B. L., of Mass.—Plaster of Paris may be applied to other purposes than safes without infringing the Safe Patent, but we do not believe that you could obtain a patent for your application of it.

S. E. H., of N. J.—The india rubber on the face of the brake would wear out too soon: great heat is generated by the friction.

R. A. G., of N. Y.—Overman's Metallurgy is the best published here. But there is no work that treats so fully on lead as we would like. Overman's work is published by Appleton: its price, we believe, is $3.

W. C. A., of Mo.—Keep your m—— in an ice house, or under vacuum, after being deprived of its air by an air pump.

G. G. M., of La.—The power of an engine is indeed estimated theoretically, by the bore of the cylinder, and the length of stroke; but this is with an understanding of its velocity. The actual power is estimated by the pressure of the steam on the area of piston, and its velocity.

H. C., of Ind.—There are plenty of water engines working in the manner you propose. We may illustrate some of them in future numbers.

J. F. M., of N. Y.—You cannot obtain any advantage from a Barker Mill, by allowing the water, after it leaves the arms, to strike against stationary buckets. How could you expect it?

J. S., of Geo.—We understand you about the saw. You surely cannot use a saw of your construction, having a larger radius than a circular saw, driven by band and pulley. If its advantages can be substantiated, we do not see anything in the way of securing a patent; these you understand best; it appears in a more favorable light now than it did before.

L. M., of Mass.—We have very carefully examined the sketch of your bedstead fastening. In Vol. 5, Sci. Am., you will find an engraving of Taylor's Patent, which covers the same device, therefore you cannot obtain a patent for it.

C. C., of N, Y.—We cannot undertake to investigate a point of so little value; turn your attention to something more useful—something likely to benefit yourself and the community in which you live.

R. M., of Conn.—A patent was granted in 1846 to Thaddeus Hyatt, of this city, for vault covers, composed of iron and glass in the manner described by you;—they are much in use in this city.

L. B. T., of Conn.—We do not think your project to prevent collisions foolish, but the only sure remedy is to have double tracks.

J. L., of Ky.—Twenty miles of water exercises no more pressure upon a gate, horizontally, than one mile of water: the pressure is as the height. When water acts different the laws of gravity must be suspended.

C. P. O., of R. I.—The observer of the meteor must have meant the real instant, not the rated hour.

S. McC., of S. C.—A wire rope will not, we think, answer your purpose, but if you think of trying one, write to the Trenton Iron Co., Trenton, N. J., where such ropes are made. Your expenses are indeed very great. At present we cannot tell you how to lessen them.

A. N. N., of Ind.—A self-capping gun is a new thing, without doubt; Maynard's is a self-primer. Send us a model.

C. M. S., of Mass.—Many people have a very bad habit of leaning back in chairs against any thing upon which it happens to be convenient to rest; many costly chairs are broken by this practice, and if you can adopt any device which will obviate this objection, you ought to have a patent for it. Your method is new, but we think it might be objected to as cumbrous.

J. K. W., of Ind.—We cannot give you any information about Mr. Robert's Machine not already published. He ought to answer your letter.

☞ Unsigned Communications are rejected unless there is abundant reason to believe that the writer is ignorant of his duty in this respect. It is not at all likely that we shall make an unwarrantable use of the names of our correspondents, therefore why withhold them?

Money received on account of Patent Office business for the week ending Saturday, Oct. 8:—

J. P. H., of Ohio, $25; H. T., of N. Y., $200: A. H. B., of N, J., $318,75; S. B., of Mass., $30; W. B., of N. Y., $250; C. R., of Ill., $25; S. M., of Ill., $5; O. B. J., of N. Y., $55; A. M. G., of S. C., $87: C. F. P., of Conn., $30; J. B. M., of N. Y., $20; W. H., of Wis., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 8:—

W. M. B., of Ohio; J. M., of N. Y.; H. S., of Texas; J. P. H., of Ohio; R. E., of Mich; W. H., of Wis.; A. B. J., of N. Y.; A. M. G., of S. C. (two cases); C. F. P., of Conn.: J. B. M., of N. Y.

A Chapter of Suggestions, &c.

☞ Any subscribers who have failed to receive either No. 1, 2, or 3 of the present Volume, are requested to make application for them immediately, as those numbers are fast growing short, and it is the desire of the publishers that all subscribers shall receive every number to which they are entitled. Any irregularity in the receipt of papers by clubs, will be promptly corrected by addressing a letter to the publishers.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and these we are ENTIRELY out of—Nos. 2, 4, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 48, 49.

READY FOR DELIVERY—We have just received from the Binders 100 copies of Vol. 8, Scientific American, which will be sold to the first applicants at $2,75 per volume. We also have about 50 complete sets of Volume 8, in sheets, which will be sold at the subscription price—$2 per set. Those who apply first will stand the best chance to get their orders filled, for after the above number are sold no more can be obtained at any price.

TO CORRESPONDENTS.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication: anonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some invention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet In making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

BINDING.—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

FOREIGN SUBSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the present volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post. office at which they wish to receive their paper, and the State in which the post-office is located.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

ADVERTISEMENTS.

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☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants.

MACHINIST'S TOOLS—CARPENTER & PLASS are now completing another lot of their Lathes, 8 by 10 feet size, swing 14 1-2 inches: 12 feet swing 22 inches; 16 by 21 feet swing 21 inches; also upright drills of various sizes. The best recommendation for these tools is found in the fact that with the best facilities they are not able to supply the demand for them. Address corner of Elizabeth and Hester sts., or No. 46 Eldridge st., New York. 1*

THE NEW HAVEN MANUFACTURING CO.—New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter; snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash. Further particulars can be had by addressing as above, post-paid, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 5tf

NEW HAVEN MANUFACTURING COMPANY—Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinists' Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Company are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 1 Platt st., New York, S. C. HILLS, Agent N. H. Manufacturing Co. 5tf

WE WANT TO CONTRACT FOR TUBULAR Boilers, from 8 to 20 horse power. Address HALL & BOLLINGER, Fayetteville, N. C. 5 2*

MECANICAL DRAWINGS—J. H. BAILEY. Mechanical or Architectural Drawings executed in all kinds of perspective. Office Tryon Row, No. 5, opposite the City Hall. 5 4*

COCHRAN'S QUARTZ CRUSHER—These machines having proved by practical operation at various gold mines their superiority over all others, for pulverising Quartz Rock, are recommended with confidence to parties in want of such machinery. A machine can be seen in daily operation in this city, on application to JOHN S. BUSSING & CO.,
4 8t 32 Cliff street, N. Y.

EUREKA GOLD SEPARATOR—This machine has been thoroughly tested by scientific and practical gold miners, and pronounced far superior to any Analgamator yet known—an Alalgamator taking up but three feet square, and very trifling power, is capable of amalgamating one ton per hour, with great ease and perfection, without any loss of quicksilver whatever. They are portable, and delivered in boxes ready for shipment. Price $300 each. Further information can be obtained on application to JOHN S. BUSSING & CO.,
4 8t 32 Cliff street, N. Y.

NEWELL'S PATENT SAFETY LAMP AND Lamp Feeder—A new article warranted to prevent all accidents from the use of Burning Fluid, Camphene and other explosive compounds, used for the production of light. For sale, wholesale and retail, by NEWELL, CALDWELL, & COFFIN, 28 Broomfield street, Boston, and by G. W. McCREADY,
4 5t* 426 Broadway, N. Y.

WINNOWING MACHINES—State, County, and Town Rights or sale of the Patent Winnowing Machines, illustrated in No. 2, Vol. 9, Scientific American. Address SAMUEL CANBY, Patentee, Ellicott's Mills, Md. 2 4*

UNITED STATES PATENT OFFICE,
Washington, Sept. 17, 1853.

ON THE PETITION of James Baldwin, of Nashua, New Hampshire, praying for the extension of a patent granted to him on the thirty-first of January, 1840, for an improvement in shuttles for weaving cloth, for seven years from the expiration of said patent, which takes place on the thirty-first day of January, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Monday, the 9th of January next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvania, Philadelphia, Pennsylvania; Evening Post, and Scientific American, New York; Boston Post, Boston, Massachusetts, and Patriot, Concord, New Hampshire, once a week for three successive weeks previous to the second Monday of January next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 3 3

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months.. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
1 tf GEO. W. BEARDSLEE.

1853. WOODWORTH'S PATENT PLANing, Tonguing, Grooving, Rabeting, and Moulding machine.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $800. Two machines are at the Crystal Palace. For rights in all parts of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 1 amtf

PATENTS OF INVENTION—ISAAC B. FUTVOYE, Patent Agent, Quebec, undertakes to procure letters patent of invention for the Province of Canada. I. B. F. will dispose of any kind of Patented Articles on Commission. 4 tf

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109, Pearl st., and 60 Beeaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinist's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also, a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. P. A. LEONARD.
1tf

LOGAN, VAIL & CO., No. 9 Gold st., New York.—Agency for Geo. Vail & Co., Speedwell Iron Works, Morristown, N. J., furnish and keep on hand Portable Steam Engines of various sizes, Saw and Grist Mill Irons, Hotchkiss's Water Wheels, Iron Water Wheels of any size, Portable Saw Mills, complete; Bogardus's celebrated Planetary Horse Powers; heaving forgings and castings for steamboats and rolling mills, Ratchet Drills of superior quality for machinists, Saw Gummers, Hand Drills, Tyre Benders, and shafting and machinery generally.
39 1y

NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tongueing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass., N. G. NORCROSS.
40 20*

McCALLISTER & BRO'THER.—Opticians and dealers in mathematical instruments, 48 Chesnut st., Philadelphia, Pa. Mathematical instruments separate and in cases, Protractors, Spacing Dividers, Drawing Pens, Ivory Scales, Tape Measures, Salometers, Spy Glasses, Microscopes, Hydrometers, &c., &c. An illustrated and priced catalogue will be sent by mail free of charge. 40 6m*

VALUABLE WATER POWER FOR SALE—Situated in Stockport, Columbia Co., N.Y., 1 1-4 miles from a depot on the Hudson River Railroad, on a never-failing stream, now estimated to be of the capacity to run 600 power looms with all necessary machinery, and may be increased: dam built of stone, 19 feet fall. The improvements on one side consists in part of a building of stone and brick 118x47; over-shot wheel, nearly new, 14 feet diameter, 12 feet bucket; on the other, one of stone and wood 60x34, good over-shot wheel 14 feet diam. 7 feet bucket; with about 30 dwellings. Terms accommodating; title indisputable. Possession given immediately. For particulars inquire of R. B. MONELL, of Hudson, N. Y., or H. S. VAN DeCARR on the premises. 3 6*

PALMER'S PATENT LEG.—Manufactured by Palmer & Co., at No. 5 Burt's Block, Springfield, Mass., for New England and New York States, and 376 Chesnut street, Philadelphia; in every instance of competition in the Fairs of the various Institutes of this country, it has received the highest awards as "the best" in mechanism, usefulness, and economy. At the "World's Fair," London, 1851, in competition with thirty other varieties of artificial legs, (by the best artists in London and Paris,) it received the Prize Medal as the best. 48 10*

NORRIS WORKS, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping, and Portable Engines, and Mining Machinery of every description.
41 1y. THOMAS, CORSON & WEST.

PIG IRON—The subscriber has always on hand a stock of the best brands of American and Scotch Pig Iron, for sale at the lowest market price. G. O. ROBERTSON, 135 Water st, cor. Pine, N. Y. 1 8*

AARON KILBORN, No. 4, Howard street, New Haven, Ct., manufacturer of Steam Engines, Boilers, &c. Noiseless Fan Blower, a superior article, for smith's work, steam engines, brass and iron founders, and machinery in general. 51 10*

IRON FOUNDERS' MATERIALS. viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by
G. O. ROBERTSON,
1 8t* 135 Water street, corner of Pine.

ALDEN'S PATENT FAN BLOWER—Gives a stronger blast, with less power than any other.
2 6* J. B. CHICHESTER, Agent, 585 Broadway, N. Y.

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines—The best in use, and applicable alike to thick and thin staves, for barrels, hogsheads, &c.; also his Head Cutting and Turning, and Stave Jointing and Crozing Machines. This machinery reduces the expense of manufacturing at least fifty per cent. For machines or territorial rights, apply to C. B. HUTCHINSON & CO., Syracuse, N. Y. 2tf

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Scientific Museum.

British Association for the Advancement of Science---Lieut. Maury's Charts.

The British Association for the Advancement of Science met at Hull,England, on the 9th ult. The usual address on the objects and proceedings of the Association was read by Prof. Hopkins, Vice President of the Royal Society.

Commencing with astronomy, he stated that between the 23d of July, 1852, and May 6, 1853, nine new planets were discovered, of which Mr. Hind had discovered four; while the probability was, that there were many more still to be recognized. In connection with this subject, he stated the result of the interview with the Premier, of England, as to the establishment of a powerful reflecting telescope in the southern hemisphere. The Earl of Aberdeen had expressed himself favorably toward the object, but had referred the matter to the Chancellor of the Exchequer. "Judging," he said, "from all we know respecting Mr. Gladstone's views on subjects of this nature, and the favorable manner in which the House of Commons has always received propositions for the advancement of scince, we have, every reason to hope that my successor in this chair may have the satisfaction of announcing to you another proof of the liberality of the Government. In such a case, the result, I doubt not, will afford another proof that the Association is doing effectively what it professes to do as an Association for the Advancement of Science." After reference to the progress of terrestrial magnetism, the publication of isothernal maps, and other purely scientific matters, the President proceeded to say, "My predecessor, in his address, informed us of an application made to our Government by that of the United States, to adopt a general and systematic mode of observing phenomena of various kinds at sea, such as winds, tides, currents. &c., which may not only be of general scientific interest, but may have an important bearing on navigation. The plan proposed by Lieutenant Maury, and adopted by the American Government, is to have the required observations regularly made by the commanders of vessels sent out to sea. I am happy to be able to state to you that our Admirality have given orders for similar observations to be made by those in command of English vessels; and we trust also that proper persons will be appointed without delay for the reduction of the mass of observations which will thus soon be accumulated. The recommendation of the general committee, that in the event of a survey of the Gulf Stream being undertaken, provision should be made for investigating its zoology and botany, has been communicated to the hydrographer of the Admirality, and favorably received. A proposition from Dr. Bache, director of the coast survey of the United States, for a joint survey of the Gulf Streams by the United States and Great Britain, having been addressed to the British Association since the Belfast meeting, has been forwarded to the hydrographer of the Admirality.

Mr. Hopkins concluded his review by an estimate of what he conceived to be the legitimate objects of the Association. "One great duty," he said," which we owe to the public is to encourage the application of abstract science to the practical purposes of life—to bring, as it were, the study and the laboratory into juxtaposition with the workshop. And doubtless, it is one great object of science to bring more easily within the reach of every part of the community the rational enjoyments as well as the necessaries of life; and thus not merely to contribute to the luxuries of the rich, but to minister also to the poor, and to promote that general enlightenment so essential to our moral progress and real advance of civilization. But still we should not be taking that higher view of science which I would wish to inculcate, if we merely regarded it as the means of supplying more adequately the physical wants of man. If we would view science under its noblest aspects, we must regard it with reference to man, not merely as a creature of physical wants, but as a being of intellectual and moral endowments, fitting him to discover and comprehend some part at least of the laws which govern the material universe, to admire the harmony which pervades it, and to love and worship its Creator."

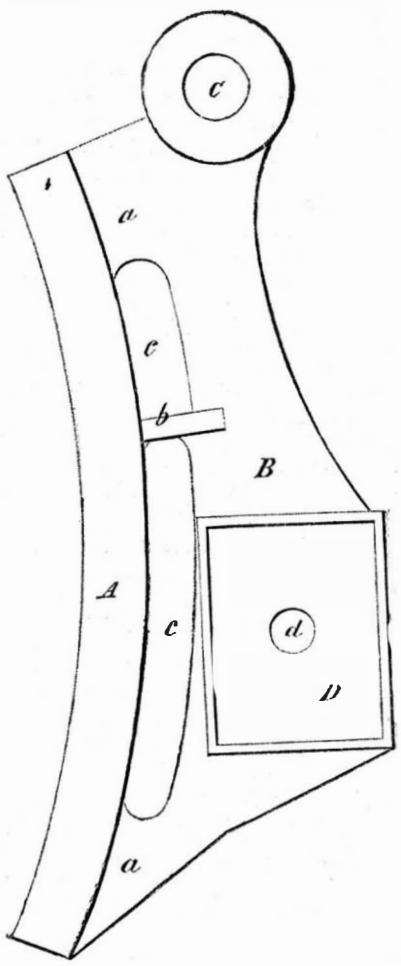
[This abstract of Prof. Hopkin's address, presents matter for rejoicing to every lover of science in our country. The influence of our countryman, Lieut. Maury, and the acknowleged lead our country has taken in nautical matters, such as the winds and currents of the ocean, &c., is something which thrills our heart. The concluding part of the address shows the difference between ancient and modern philosophers. In the days of old they carefully used knowledge to keep the people down; modern philosophers endeavor to elevate them. We thank Prof. Hopkins for the sentiment which he has uttered above, namely, "one great duty we owe the public, is to bring the laboratory into juxtaposition with the workshop; to encourage the application of abstract science to the practical purposes of life." We must say that both the British and American Associations for the Advancement of Science, greatly need this advice. The majority of the papers hitherto presented by these associations have been so abstract as to be positively useless in relation to any useful purpose. We will endeavor after this to present an abstract of the few practical papers which were presented at the sittings of this Association.

Morse's Car Brake.

The annexed engravings are views of an improvement in car brakes, for which a patent was granted to Stephen Morse, of Springfield, Mass., on the 6th of last month, (Sept. 1853.) Figure 1 is a side elevation of the brake, and figure 2 is a rear elevation. The same letters refer to like parts.

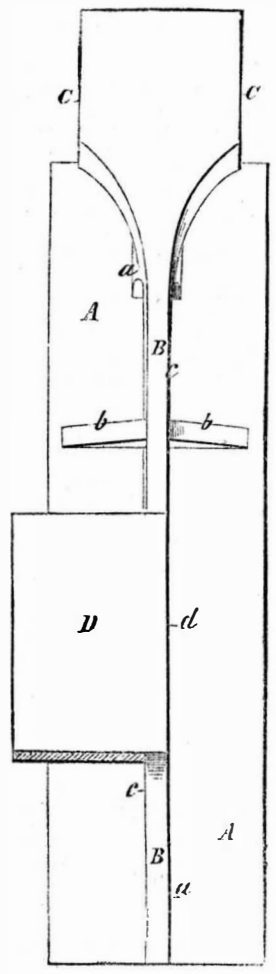
The nature of the invention consists in providing a brake of cast metal, constructed in such a manner that the friction surface of the same will be worn off before the other portions are impaired. It is constructed in one solid piece, dispensing with bolts and pins for holding the parts together, as in other brakes. The point of suspension is placed in such a position that the brake, when relieved of pressure, will disengage with the wheel by its own gravity, thus avoiding the use of springs, or other re-acting agents.

FIG. 1.



A is the concave friction plate or rubber that plays against the tread face of the wheel. It is connected at *a a*, and the brace plates, *b b*, to a light spine plate, B, on its back; *c c* are open spaces between the spine, B and A. They extend to nearly the entire surface of the rubber, A, and are only interrupted by the connections, *a a* and *b b*; C is the point of suspension. It consists of an eye for the reception of a bolt in the timbers of the car, to which the brake is subtended. This suspension eye is placed in the head of spine, B. Below this, and about midway of the back of A, the socket, D, is formed on the spine plate. A bolt passes through the hole, *d*, to secure the end of the cross-tie or timber which extends to the next brake on the opposite side of the car.

FIG. 2.



This brake is applied in the usual manner against the face of the wheel. The friction caused by applying the brake generates a great quantity of heat, but a very small portion of it is conducted to the spine, as the heavy rubber A, will retain the most of it. This rubber will wear out long before the parts, C D, which will endure for a great length of time. This brake is economical in its construction. The claim is for the brake as constructed—its mechanical character, namely, "the spine, B, having the point of suspension, C, and the socket, D, on it, with the open spaces, *c c*, and the plates, *b b*, in combination with the friction rubber, A, as set forth."

More information may be obtained by letter addressed to Mr. Morse.

The Greatest Clipper-Ship in the World.

On the 4th inst., the mammoth clipper ship "Great Republic," was successfully launched at East Boston, bounding into her adopted element amid the cheers of thirty thousand spectators. She is a marine wonder, the longest, largest, and sharpest ship ever built in the United States. The dimensions given her in the Boston papers are, length 325 feet, width 53 feet, depth 36 feet, registered tonnage, 4,000, with stowage capacity for between 6,000 and 8,000 tons.

It is estimated that she has 2,380 tons of white oak in her frames, hooks and knees; 1,500,000 feet of hard pine in her kelsons, ceiling, deck frames, decks, planking, &c., 300 tons of iron, 50 tons of copper, 1,600 knees, and that the labor bestowed upon her amounts to 50,000 days' work. She has concave lines forward and aft, and a round stern, and is coppered up to 25 feet draught.

All her accommodations are on the upper between decks, and on the spar deck she has a shelter house for the crew in bad weather, a steam engine of 15 horse power, designed to do all the heavy work of the ship, such as taking in and discharging cargo, and hoisting topsails at sea. She has four masts, the after one fore-and-aft rigged, like the mizzenmast of a bark, and the others have Forbes' square rig. Her mainmast is 4 feet in diameter, and 131 feet long, and the mainyard is 28 inches in diameter, and 120 feet long, and the others in like proportion. She will spread 16,000 yards of canvas in a single suit of sails, and will carry 100 men and 30 boys. She is owned and was built by Donald McKay, of East Boston; this fact is already known throughout the length and breadth of the land. She will be commanded by his brother, Capt. L. McKay, formerly of the "Sovereign of the Seas."

Cotton Ropes for Ships.

We notice among the Boston vessels that these ropes are becoming generally introduced; they are the least expensive of any cordage, and if some substance could be invented to saturate the cotton to keep out the water, the importation of foreign rigging would soon cease. We notice on the new ship John N. Cushing, these ropes have been introduced for buntlines, as they chafe the sails but very little.—[Newburyport Union.

[If the rope manufacturers would treat the ropes with a solution of alum, and then dry in a room of a temperature about 220° Fah., they would make them almost water-proof.

LITERARY NOTICES.

RUDIMENTS OF THE ART OF BUILDING—Published by Stringer & Townsend, New York City, and edited by John Bullock, Architect and C. E.—The author candidly admits that it required but little alteration "to suit Dobson's excellent little treatise to American readers." We like to see such a spirit as this displayed. Mr. Bullock has done his work well and faithfully. The publishers have also made a neat and well finished book. It is illustrated with over one hundred engravings on wood, and is strictly elementary in its character.

LITTELL'S LIVING AGE—No. 489, of this unrivalled work, commencing volume 3 of the new series, contains a long article on the pedigree of Heraldry, and has a just tribute to the labors of Lieut. Maury, from the "London Examiner." This number contains 14 long articles, a number of fine pieces of poetry, and quite a number of interesting short articles. As a cheap magazine for general reading of a solid character, it is unsurpassed. Published by Littell, Son & Co., Boston.

HOUSEHOLD WORDS.—We have received from Messrs. McElrath & Baker the October number of this charming publication. Some of our readers may not be aware that this publication is edited by Charles Dickens—the most popular writer of the day.

AMERICAN UNION—A weekly journal of choice family reading, conducted by R. B. Fitts & Co., Boston, Mass. It is a capital literary journal, and deserves a liberal subscription list. A new volume will commence in about two weeks, which is the most favorable time to subscribe—we advise all our friends to do this without delay. Terms $2.

MECHANICS

Manufacturers and Inventors.

The present Volume of the SCIENTIFIC AMERICAN commences under the most gratifying assurances, and appearances indicate a very marked increase to the subscription list. This we regard as a flattering testimonial of the usefulness and popularity of the publication so generously supported. We are greatly indebted to our readers for much valuable matter, which has found a permanent record on its pages. The aid thus contributed has been most important to our success, and we are grateful for it.

From our foreign and home exchanges—from the workshops, fields, aud laboratories of our own country, we have supplied a volume of more than four hundred pages of useful information, touching every branch of art, science, and invention, besides hundreds of engravings executed by artists exclusively in our employ.

The present Volume will be greatly improved in the style and quantity of the Engravings, and in the character of the matter, original and selected. Having every facility for obtaining information from all parts of Europe, we shall lay before our readers, in advance of our cotemporaries, a full account of the most prominent novelties brought forward.

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